PB87-189742

Superfund Record of Decision (EPA Region 4)
Hipps Road Landfill, Jacksonville
Duval County, Florida, September 1986

(U.S.) Environmental Protection Agency
Washington, DC

Sep 86

U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R04-86/010
September 1986

PB87-189742

EPA

Superfund Record of Decision:

Hipps Road Landfill, FL

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TECHNICAL REPORT DATA

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1. REPORT NO.
EPA/ROD/R04-86/010

2.

3. RECIPIENT'S ACCESSION NO.
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4. TITLE AND SUBTITLE
SUPERFUND RECORD OF DECISION
Hipps Road Landfill, FL

5. REPORT DATE
September 3, 1986

6. PERFORMING ORGANIZATION CODE

7. AUTHOR(S)

8. PERFORMING ORGANIZATION REPORT NO.

9. PERFORMING ORGANIZATION NAME AND ADDRESS
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10. PROGRAM ELEMENT NO.

11. CONTRACT/GRANT NO.

12. SPONSORING AGENCY NAME AND ADDRESS
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

13. TYPE OF REPORT AND PERIOD COVERED
Final ROD Report

14. SPONSORING AGENCY CODE
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15. SUPPLEMENTARY NOTES

16. ABSTRACT

Hipps Road Landfill is located at the intersection of Hipps Road and Exline Road in Jacksonville Heights, Duval County, Florida. The area is a semi-rural residential neighborhood. Two homes are physically on the landfill and three other residences are immediately adjacent to it. The landfill is situated above the 500-year flood plain and there are no ecologically sensitive areas nearby. Surface water is not used to supply drinking water in the area, and recreational uses consist of swimming, boating, fishing, and similar activities. Present lateral distance of ground water contamination extends approximately 1,000 feet northeast of the site. In 1968, the property owner, Mr. G. O. Williams (now deceased) contracted with Waste Control of Florida, Inc., a local disposal company, to fill in the site. No record of the fill material exists. Operations ceased in 1970 when a permit request to extend the landfill eastward was denied. Problems were first reported in the early 1970s when a pond adjacent to the landfill developed a thick, smelly film, and fish and nearby vegetation died. No record of action was noted. In February 1983 area residents began to complain of a foul odor and taste in the drinking water. Well sampling identified the presence of VOCs in the drinking water. During re-sampling studies in March, April and August 1983, larger suites of VOCs and metals were discovered. Between June and October 1983, the city installed waterlines supplying the site residents with city water. By January 1985
(See Attached Sheet)

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Record of Decision Hipps Road Landfill, FL Contaminated Media: gw, sw Key contaminants: organics, VOCs, inorganics, toluene, metal		

18. DISTRIBUTION STATEMENT

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None

20. SECURITY CLASS *(This page)*
None

21. NO. OF PAGES
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22. PRICE

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EPA/ROD/R04-86/010
Hipps Road Landfill, FL

16. ABSTRACT (continued)

ground water was no longer a source for drinking water in the area. The primary contaminants of concern include: VOCs, TCE, metals, xylene, toluene, benzene.

The selected remedial action includes ground water recovery and treatment at the POTW; Subtitle D landfill closure; and institutional controls. The estimated cost for this remedy is $3.9-4.4 million. Capital and O&M costs were not specified separately, however, EPA will fund O&M activities for one year after completion of the remedial action. O&M will continue for 20 years using funds provided by the State of Florida.

RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

SITE

Hipps Road Landfill
Jacksonville, Duval County, Florida

DOCUMENTS REVIEWED

I am basing my decision primarily on the following documents describing site specific conditions and the analysis of effectiveness and cost of the remedial alternatives for the Hipps Road Landfill Site:

- Hipps Road Landfill Remedial Investigation Report,
- Hipps Road Landfill Feasibility Study,
- Summary of Remedial Alternative Selection,
- Hipps Road Landfill Public Health Evaluation,
- Agency for Toxic Substances and Disease Registry - Health Assessment: Hipps Road Landfill,
- Department of the Interior - Release from Claims for Damages to the Natural Resources Under DOI Trusteeship.

DESCRIPTION OF THE SELECTED REMEDY

- Proper landfill closure under Subtitle D of RCRA and Chapter 17-7 of the Florida Administrative Code.

- Recovery of contaminated ground water with treatment at the Local Publicly Owned Treatment Works (POTW). Contaminants will be recovered until the ground water quality is in compliance with the standards set forth under the Safe Drinking Water Act (SDWA). Contaminants not addressed under the SDWA will be removed until compliance with the 1980 Water Quality Criteria Human Health Standards is reached. Where no standards exist, a cancer risk of 10^{-6} will be used as the clean-up target; however, this will be redefined in the design phase.

- The ground water recovery systems will be maintained in place and re-activated if subsequent levels of ground water contaminants are detected in levels above the predetermined standards.

- Continued monitoring of the ground water after recovery and treatment of the contaminated ground water is completed, according to the standards established during the Remedial Design Phase. Monitoring will continue for twenty (20) years following the final ground water recovery phase.

- Institutional controls, which will be fully identified during remedial design, will be implemented. These controls may include, but will not be limited to:

  - fencing the site,
  - grouting existing private wells,
  - instituting a well drilling ban which can be lifted at the conclusion of the 20 year monitoring period, and
  - acquiring affected properties under the policies and practices established by the Federal Emergency Management Agency (FEMA).

- Operation and maintenance (O&M) activities will include:

  - operating and maintaining the ground water recovery system,
  - ground water monitoring,
  - maintaining the landfill cap and associated systems,
  - maintaining the connector sewer lines which access mains to the POTW,
  - maintaining the site security systems.

Additional O&M activities may be identified during the Remedial Design.

DECLARATIONS

Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the National Contingency Plan (40 CFR, Part 300), I have determined that the above Description of Selected Remedy for the Hipps Road Landfill Site is a cost-effective remedy and provides adequate protection of public health, welfare, and the environment. The State of Florida has been consulted and agrees with the approved remedy. These activities will be considered part of the approved action and eligible for Trust Fund monies until ground water clean up levels are attained or for a 10 year period, whichever occurs first. The basic assumption is that the responsible parties fail to undertake the design and implementation of the selected remedy. If clean up levels are not reached within the 10 year period, the Remedial Design and Remedial Action will be re-evaluated.

I have also determined that the action being taken is appropriate when balanced against the availability of Trust Fund monies for use at other sites. In addition, the selected remedy is more cost-effective than other remedial actions, and is necessary to protect public health, welfare or the environment. All off-site disposal shall be in compliance with the existing policies of EPA.

If additional remedial actions are determined to be necessary, a Record of Decision will be prepared for approval of the future remedial action.

9/3/86
Date

Lee A. DeHihns III, Deputy
Jack E. Ravan
Regional Administrator

SECTION I
SITE LOCATION AND DESCRIPTION

The Hipps Road Landfill is located on the southeastern corner at the intersection of Hipps Road and Exline Road in Jacksonville Heights, Duval County, Florida (Figure 1). The area is a semi-rural residential neighborhood. Two homes are physically on the landfill and three other residences are immediately adjacent to the landfill.

The landfill has relatively low topographic relief and is sparsely covered with grasses, brush, and pine trees. Fill material extends to a depth of approximately 25 feet, and debris is scattered across the surface. Due to degradation of the fill material and resultant subsidence, many of the disposal cells can be visually identified. There are no ecologically sensitive areas near the Hipps Road Landfill, and it is situated above the 500-year floodplain. Surface water is not used as a drinking water supply in the area, and recreational purposes consist of swimming, boating, fishing, and similar activities.

Until recently, the area residents relied exclusively on ground water resources for their water supply. In 1984, the City of Jacksonville extended the city water mains into the area. Citizens who had not elected to hook-up to the city water supply were connected during 1985 under an EPA emergency response action.

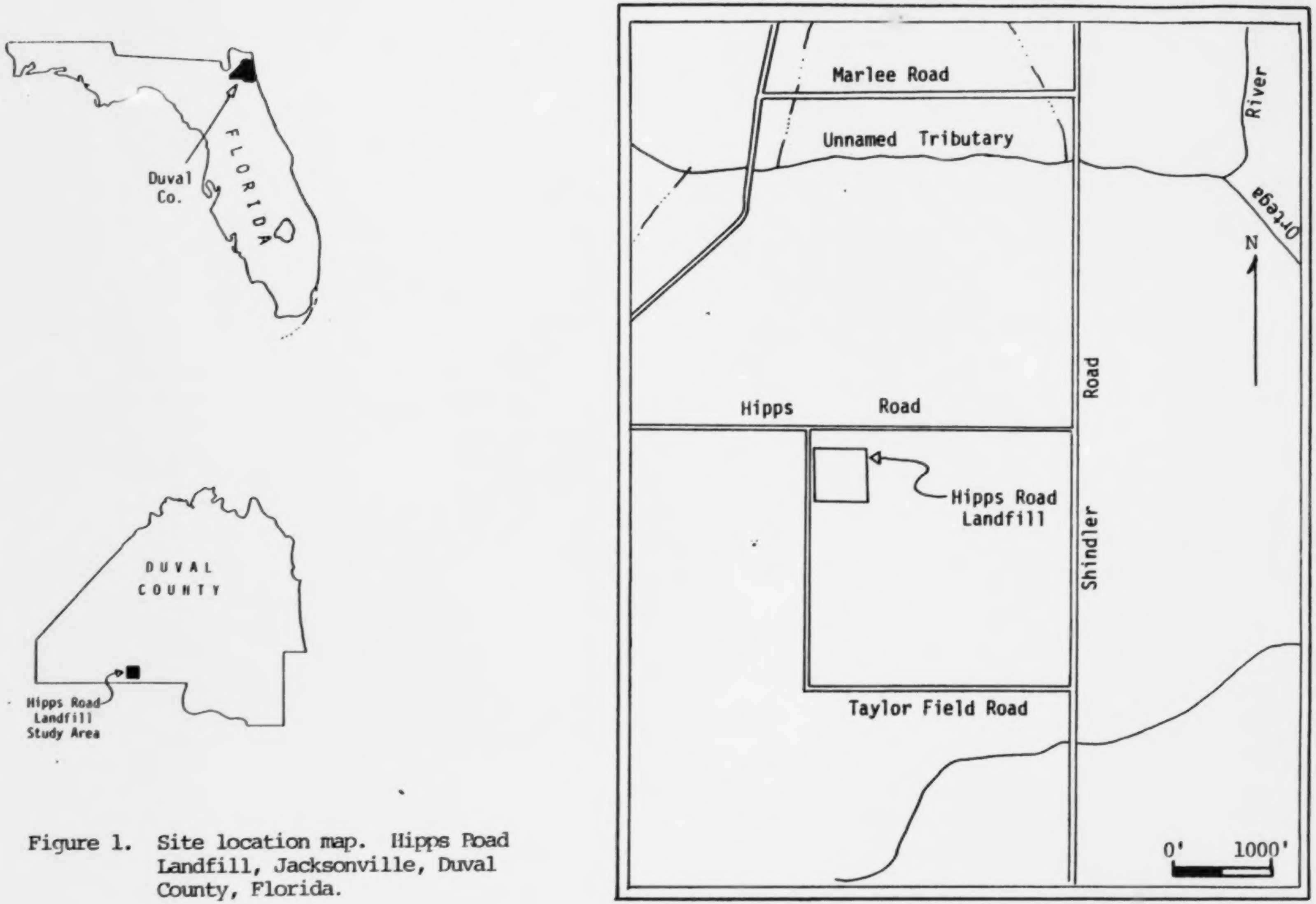

FLORIDA
Duval Co.
DUVAL COUNTY
Hipps Road Landfill Study Area
Marlee Road
Unnamed Tributary
River
Ortega
N
Hipps Road
Hipps Road Landfill
Shindler Road
Taylor Field Road
0'
1000'

Figure 1. Site location map. Hipps Road Landfill, Jacksonville, Duval County, Florida.

SECTION II
SITE HISTORY

Initially, the landfill area was a cypress swamp. In the mid-1960's, the property was owned by Mr. G. O. Williams. Mr. Williams (now deceased) contracted with at least one local disposal company to fill in the swamp in 1968.

Before 1970, landfills were not required to undergo permitting and, therefore, no records of the fill materials were made. In 1970, a request was submitted to the City of Jacksonville for permission to extend the landfill eastward. The request was denied and operations ceased in 1970.

At that time, the landfill was covered by a thin layer of soil and divided into lots. These lots are currently owned by Mr. and Mrs. Donald Woodman (9084 Hipps Road), Mr. Henry Vorpe (9110 Hipps Road), Mrs. W. H. Gore (9032 Hipps Road), and Mr. A. Nolan (7145 Exline Road).

Two parties have been identified as Potentially Responsible Parties. The first is a hauling company that undertook the landfilling operations, Waste Control of Florida, Inc., which was acquired by Waste Management, Inc., of Oak Brook, Illinois. Based on this chain of ownership, Waste Management, Inc., was issued a notice letter on November 18, 1985.

Materials recovered from the landfill indicate that one source of the fill material was the U. S. Navy facilities (N.A.S. Jacksonville and N.A.S. Cecil Field), which are near the site. The materials include cans of trichloroethene (which have Navy serial numbers and identification), practice artillery rounds, microfilm of military equipment designs, and military training manuals. Anecdotal information from retired employees of Waste Control of Florida, Inc. indicates that material from the Naval facilities was hauled to the Hipps Road Landfill by Waste Control of Florida. The notice letter to the U. S. Navy was issued on March 22, 1985. At that time, representatives of the U. S. Navy indicated that they would be unwilling to conduct the RI/FS and the negotiations were suspended.

Problems associated with the Hipps Road Landfill were first reported in the early 1970's when the pond adjacent to the landfill, now owned by Al and Gail Speicher (9040 Hipps Road), developed a thick, smelly film and fish and nearby vegetation died.

In February 1983, residents in the area began to complain of a foul odor and taste in the drinking water. At that time, the City of Jacksonville sampled private wells and found vinyl chloride and methylene chloride to be present. A re-sampling was conducted in March 1983 to verify contamination and toluene, vinyl chloride, and methlyene chloride were found. A third sampling was conducted in March/April 1983 by the Department of Health and Rehabilitative Services. A much larger suite of volatile organic compounds were found: benzene, ethylbenzene, toluene, xylene, methylphenol, o-cyclohexene, dichlorobenzene, methylene chloride, dichloroethane, trichloroethene, vinyl chloride, dichloroethylene, 2-butanone, and 4-methyl-2-pentanone.

At that time, the City of Jacksonville began to provide residents with emergency bottled water. By June 1983, the City had initiated the installation of city water lines to the affected area. Construction of the water lines was completed in October 1983.

In August 1983, a joint study by the Florida Department of Environmental Regulation, the St. Johns Water Management District, the U. S. Geological Survey, Jacksonville Bio-Environmental Services Division, and the Duval County Public Health Division was completed. The study found a similar suite of chemicals noted in the March/April 1983 investigation: 1,1-dichloroethane, benzene, toluene, ethylbenzene, xylene, n-butylbenzene, dichlorobenzene, o-chlorotoluene, methylene chloride, chloroform, 1,2 dichloroethane, 1,1,2,2 tetrachloroethane, 1,2-dichloroethylene, trichloroethene, tetrachloroethylene, 2-butanone, tetrahyrofuran, mercury, lead, zinc.

In August 1983, the Hipps Road Landfill was proposed for inclusion on the National Priorities List with a Hazard Ranking System score of 31.94. A year later, in August 1984, the site was approved for remedial activities under CERCLA. EPA's REM II contractor, Camp Dresser & McKee was tasked to perform the RI/FS in September 1984. The site was finalized on the NPL in September 1984.

In January 1985, EPA initiated an Emergency Response Action to connect local residents who were still using ground water supplies to the City water supply. This response action was completed in September 1985.

After finalization of the Hipps Road Landfill Work Plan in April 1985, the Remedial Investigation field investigation was initiated. The Remedial Investigation Report was finalized in February 1986, and the Feasibility Study was released for public comment in April 1986. A public meeting was held in Jacksonville, Florida, on May 7, 1986.

SECTION III
CURRENT SITE STATUS

ONSITE SOILS

Soil samples were collected from 17 locations within the landfill (Figure 2). The identified contaminants were not found to be pervasive due to the heterogeneous nature of the landfill. The base of the landfill was identified to be 24 to 26 feet below the surface.

The contaminants found include nickel, zinc, aluminum, mercury, lead, sodium, benzene, chlorobenzene, ethylbenzene, xylene, carbon disulfide, methyl ethyl ketone, di-n-octylphthalate, 1,4-dichlorobenzene, 2-methyl napthalene, di-n-butylphthalate, bis (2 ethylhexyl) phthalate, and napthalene (Table 1). However, the risk assessment found that none of these compounds were present in concentrations of toxicological concern (FS, p. 3-11).

Potential migration of the soil contaminants is via percolation of rainwater into the ground water, lateral migration of the ground water through the soils, or storm water runoff from the surface and into the small pond adjacent to the landfill.

Soils in the landfill are poorly consolidated and sandy in nature. Although the landfill was never capped, it was covered with a thin discontinuous layer of sand at the time operations ceased.

SURFACE WATER AND SEDIMENTS

The pond, which lies along the eastern border of the landfill, is recharged by rainfall and ground water, and discharge is by lateral movement into the surficial aquifer. Sediment and water samples collected from this pond indicate that it has not been contaminated by the landfill (RI, p. 5-7).

To the north of the site is an unnamed tributary, which flows east into the Ortega River, and ultimately into the St. Johns River. This unnamed tributary also captures ground water flowing from the site. Samples from the stream water and sediments indicate that there is no contamination which can be attributed to the landfill (RI, p. 5-7).

HYDROGEOLOGY

Ground Water Characteristics. At the Hipps Road Landfill site ground water contaminants are present in the Surficial Aquifer System. The surficial aquifer is comprised of three zones: the water table zone, the semi-confining unit, and the limestone unit. During the Remedial Investigation it was established that contaminants had invaded both waterbearing units. Ground water level elevation measurements from wells in the vicinity of the site indicate that the ground water under the landfill has a steep vertical downward component of flow, based on tri-level measurements. The ground water generally flows to the northeast and east. As the ground water approaches the unnamed tributary, it exhibits an upward vertical component, and may ultimately discharge into the unnamed tributary.

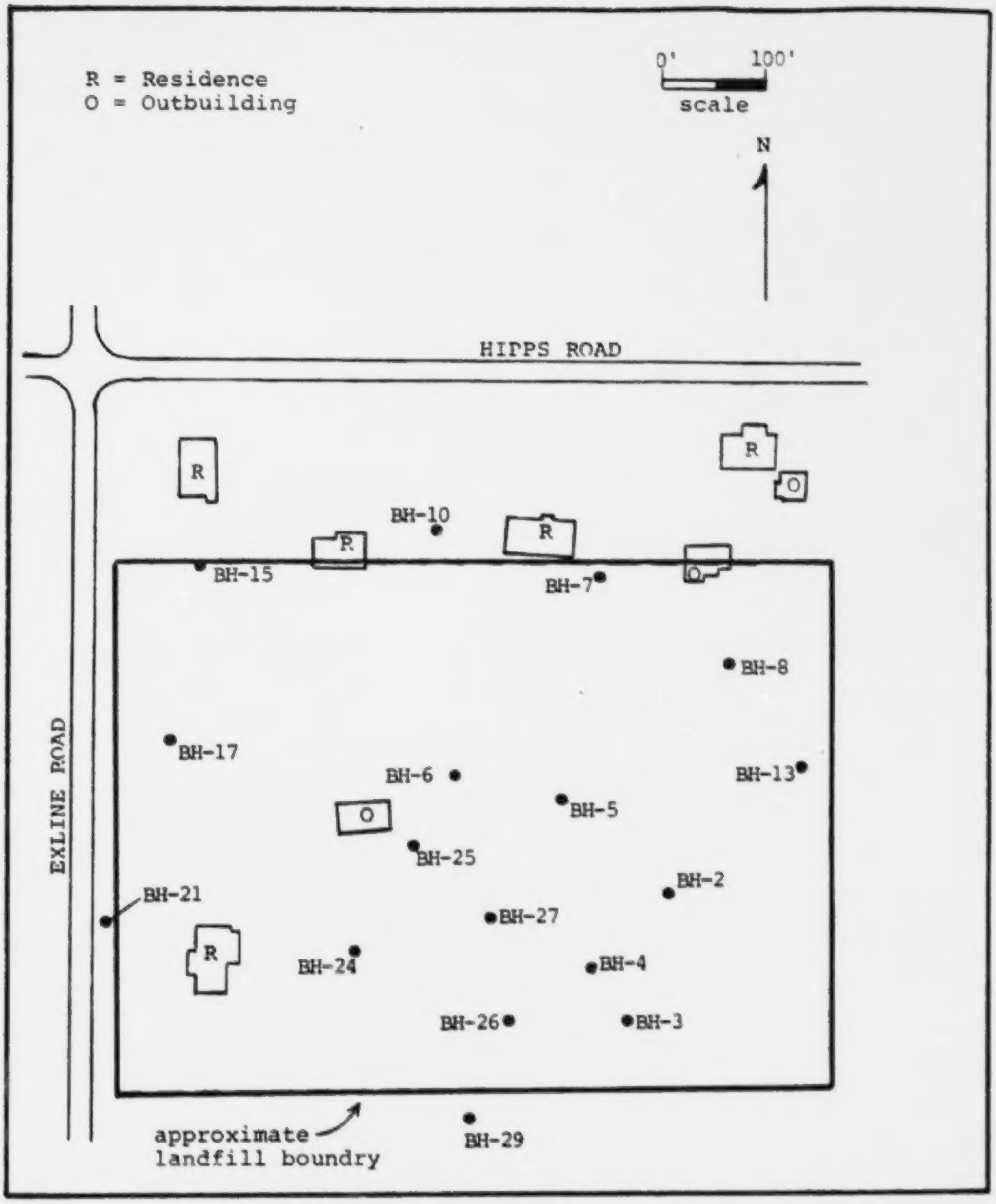

R = Residence
O = Outbuilding
0'
100'
scale
N
HIPPS ROAD
EXLINE ROAD
R
O
BH-10
BH-15
BH-7
BH-8
BH-17
BH-6
BH-13
BH-5
BH-25
BH-2
BH-21
BH-27
BH-24
BH-4
BH-26
BH-3
BH-29
approximate
landfill boundry

Figure 2. Onsite Soil Sampling Locations Used During the Hipps Road Landfill Field Investigation.

Table 1. Contaminants Identified in Onsite Soil Samples. Concentration is in Milligrams Per Kilogram (mg/kg).

	BH-2	BH-3	BH-4	BH-5	BH-6	BH-7	BH-8	BH-10	BH-13
PCB (Aroclor 1260)									
Methyl Ethyl Ketone									
Ethyl Benzene									
Toluene	(.64)		(.16)	(1.6)		(.48)	(1.1)		
Di-N-Octylphthalate									
Benzyl Butyl Phthalate									
1,4-Dichlorobenzene									
2-Methyl Napthelene									
Di-N-butylphthalate									
Bis (2-ethylhexyl) Phthalate								.096	
Napthalene									
Benzene									
Chlorobenzene									
Xylene									
Carbon Disulfide									
Aluminum					470			15x	
Arsenic		(.04)							
Cadmium					(1.2)				
Chromium	(.8)		(.9)						
Copper									(1.0)
Iron					250				
Lead								3.6	
Manganese					9.3				
Mercury									(0.02)
Nickel			(1.8)						
Sodium									
Zinc				(.8)	(.7)				3.2

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 1 (cont.). Contaminants Identified in Onsite Soil Samples. Concentration is in Milligrams Per Kilogram (mg/kg).

	BH-15	BH-17	BH-21	BH-24	BH-25	BH-26	BH-27	BH-29
PCB (Aroclor 1260)								
Methyl Ethyl Ketone		.003						
Ethyl Benzene				.011	.03		(1.59)	
Toluene	1.48					(.26)	(1.23)	(.20)
Di-N-Octylphthalate					.043x			
Benzyl Butyl Phthalate					4.3			
1,4-Dichlorobenzene					.14x			
2-Methyl Napthelene				.058	.55			
Di-N-butylphthalate					.19x			
Bis (2-ethylhexyl) Phthalate		330x		1.4				
Napthalene				.093x	.45			
Benzene		.004		.004	.005			
Chlorobenzene		.052		.02	.11			
Xylene					.32			
Carbon Disulfide					.001			
Aluminum	1700	3400	8600x	1900	6300x			
Arsenic								
Cadmium								
Chromium							(1.2)	
Copper	(.6)							(1.9)
Iron	420	500x		740x	1100x			
Lead	(1.3)	12x		6.3	18			
Manganese	8.7							
Mercury				.10				
Nickel	14							
Sodium					2100x			
Zinc	(22)33						(2.4)	(2.8)

r = data rejected under QA/QC
x = estimated value
() = local lab data

Ground Water Contaminants. Several contaminants were found in ground water collected from on site bore holes. Onsite ground water sample collection locations are shown in figure 3. The contaminants found are listed in table 2.

A larger suite of contaminants was found downgradient from the site. Samples were collected from three types of wells: existing (USGS) monitoring wells, private water wells, and new monitoring wells installed during the RI field investigation. Sample locations are shown in figures 4, 5, and 6. The concentrations of contaminants in each respective type of well are listed in tables 3, 4, and 5. Ground water contaminants can be recovered under the remedial response selected for the site. The present lateral distance of ground water contamination extends approximately 1000 feet northeast of the site.

Recovery scenarios are complicated by the detection of contamination in the limestone unit at significant distances upgradient from the site. The upgradient contaminants are limited to toluene, carbon disulfide, and xylenes in the USGS monitoring wells; C-5 alkylbenzene sulfenamide, C-6 alkylphenol, carbon disulfide and toluene in the EPA monitoring wells; and toluene and bromodichloromethane in the private wells. Only toluene is pervasive. It is not within the scope of this project to directly address contaminants migrating from other unknown sources. However, these compounds are present at levels below the 1980 Water Quality Criteria.

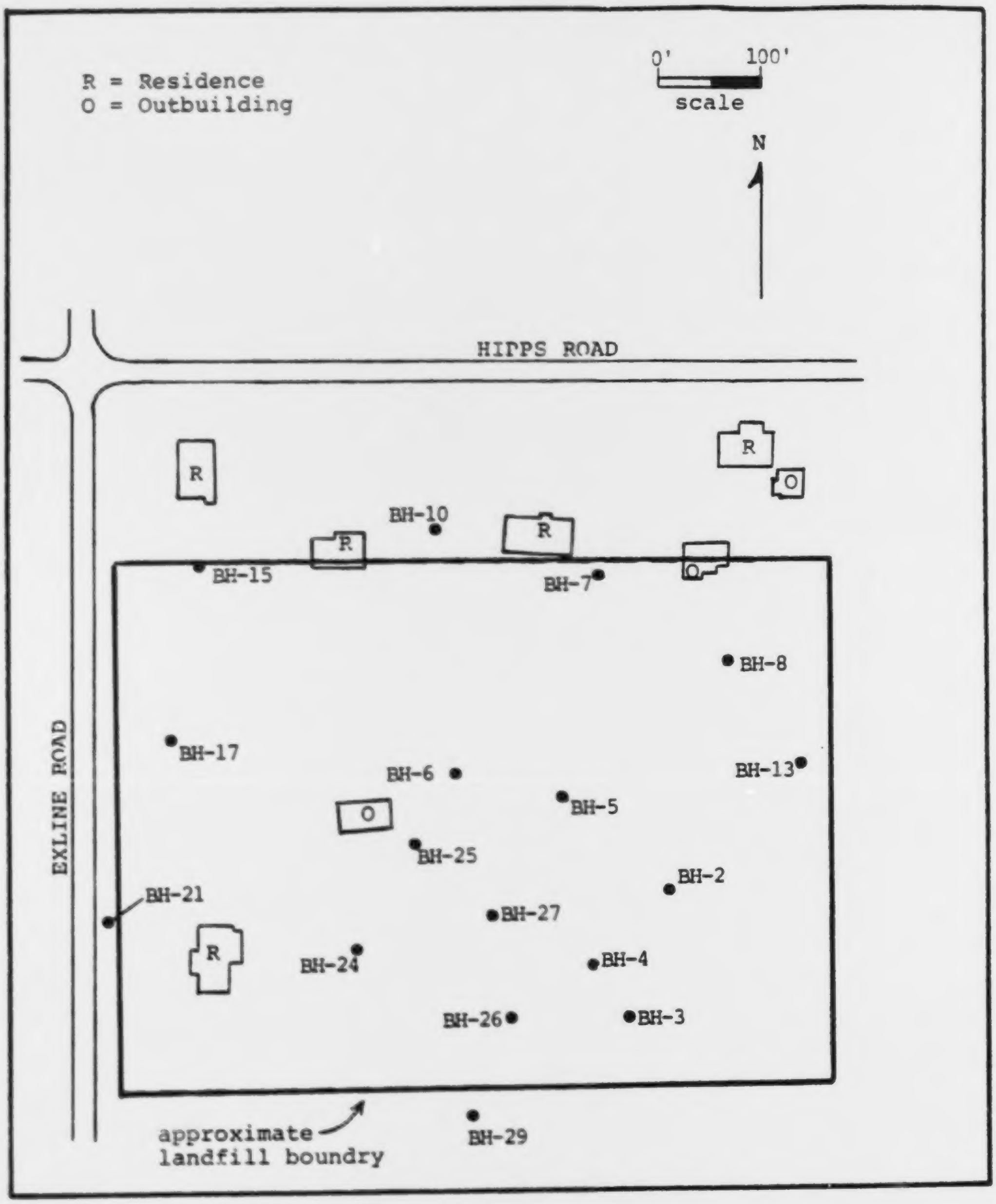

R = Residence
O = Outbuilding
0'
100'
scale
N
HIPPS ROAD
EXLINE ROAD
R
O
BH-10
BH-15
BH-7
BH-8
BH-17
BH-6
BH-13
BH-5
BH-25
BH-2
BH-21
BH-27
BH-24
BH-4
BH-26
BH-3
BH-29
approximate
landfill boundry

Figure 3. Onsite Ground Water Sampling Locations Used During the Hipps Road Landfill Field Investigation.

Table 2. Contaminants Identified in Ground Water Samples from Onsite Bore Holes. Concentration in Micrograms Per Liter (ug/l).

	BH-2	BH-3	BH-4	BH-5	BH-6	BH-7	BH-8	BH-10	BH-13
PCB (Aroclor 1242)									
PCB (Aroclor 1254)									
PCB (Aroclor 1260)									
Benzene	(27)	(18.3)	(20.5)	(408)	(5.8) 5.2	(7.3) 2.5x	3.3		
Toluene	(2.1)	(10.8)		(5.4)	(4.9) 3.8x	(2.1)			
Carbon Disulfide									
Chlorobenzene	(105)	(89.7)	(45.3)	(397)	(68.7)65	(66.4)26	(5.2)		(4.5)
Ethyl Benzene	(98.5)	(5.3)	(162)	(24.9)	(20.4)17	(85.3)			(5.0)
1,2-Dichlorobenzene	(22)		(18.9)		(18.4)	(21.6)			(7.8)
1,4-Dichlorobenzene					11x				
Xylene					38	3.3x			
Methylphenol									
Methyl Napthelene									
N-Nitrosodiphenylamine					17x				
Napthalene					11x				
Bis (2-ethylhexyl) phthalate									
Phenol									
Aluminum					28,000	180,000x		12,000	
Arsenic	(60)	(40)	(20)		(88)88	(40) 140			
Barium									
Beryllium									
Cadmium		(10)		(8)	(12)12				
Calcium					3400	10,000x		14,000x	
Chromium	(30)	(40)	(40)		(50)50	(60)			
Cobalt									
Copper			(20)						
Cyanide									
Iron					44,000	42,000x		4400x	
Lead					(12)12	(30)26			
Magnesium					8100			13,000x	
Manganese					490				
Mercury						1.6			
Nickel					(26)26	(50)	(10)		(30)
Potassium					10,000				
Selenium									
Sodium					6600	6500x			
Vanadium									
Zinc	(190)	(60)	(200)	(130)	(20)180	(50)	(10)		(20)

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 2 (cont.). Contaminants Identified in Ground Water Samples from Onsite Bore Holes. Concentration in Micrograms Per Liter (ug/l).

	BH-15	BH-17	BH-21	BH-24	BH-25	BH-26	BH-27	BH-29
PCB (Aroclor 1242)				4.6	36x			
PCB (Aroclor 1254)				1.8				
PCB (Aroclor 1260)					38x			
Benzene		14		7.9	8.4		(101)	
Toluene		49		38			(23.9)	
Carbon Disulfide	18	4.8		5.4	13			
Chlorobenzene		110		19	37		(237)	
Ethyl Benzene				7.7	6.2x		(171)	
1,2-Dichlorobenzene							(39.3)	
1,4-Dichlorobenzene		3.4x			3.2x			
Xylene		13		220	120			
Methylphenol		5.7x		4				
Methyl Napthelene				3	2.6x			
N-Nitrosodiphenylamine	9.6							
Napthalene				16x	1.3			
Bis (2-ethylhexyl) phthalate			96		29			
Phenol		34						
Aluminum	1,000,000	31,000	15,000	690000x	650000x			
Arsenic	220						(5)	
Barium	540			1200x	3900			
Beryllium	19							(10)
Cadmium	(60)8.4				1400x	(7)	(50)	(50)
Calcium	40,000	24,000x	2700x	2800x	54,000x			
Chromium	(50)100			1000x	1100x	(10)	(20)	(20)
Cobalt	42							
Copper	(50)220				1200x			
Cyanide				310				
Iron	54,000	83,000x	1400x	200000x	280000x			
Lead	(150)40	100		34,000	5300x			
Magnesium	18,000	2500x	1200x	6900x	5700x			
Manganese	300			1000x	1400x			
Mercury		.18x		18				
Nickel	(50)370							(30)
Potassium	13,000	1400x		1800x	4800			
Selenium	27							
Sodium	30,000	5200x		1600x	76,000x			
Vanadium	1100							
Zinc	(860)1400			11,000x		(40)	(30)	(30)

r = data rejected under QA/QC
x = estimated value
() = local lab data

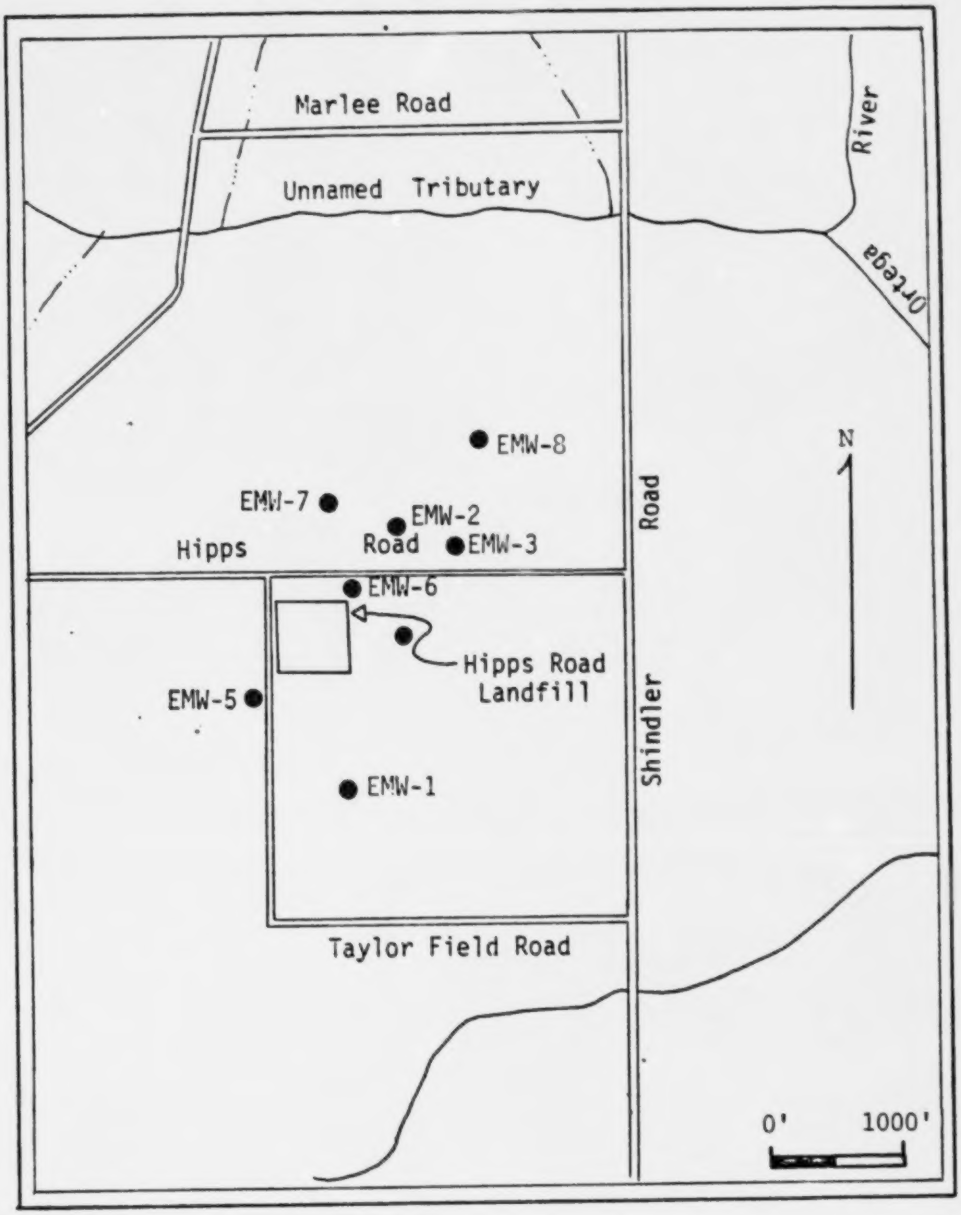
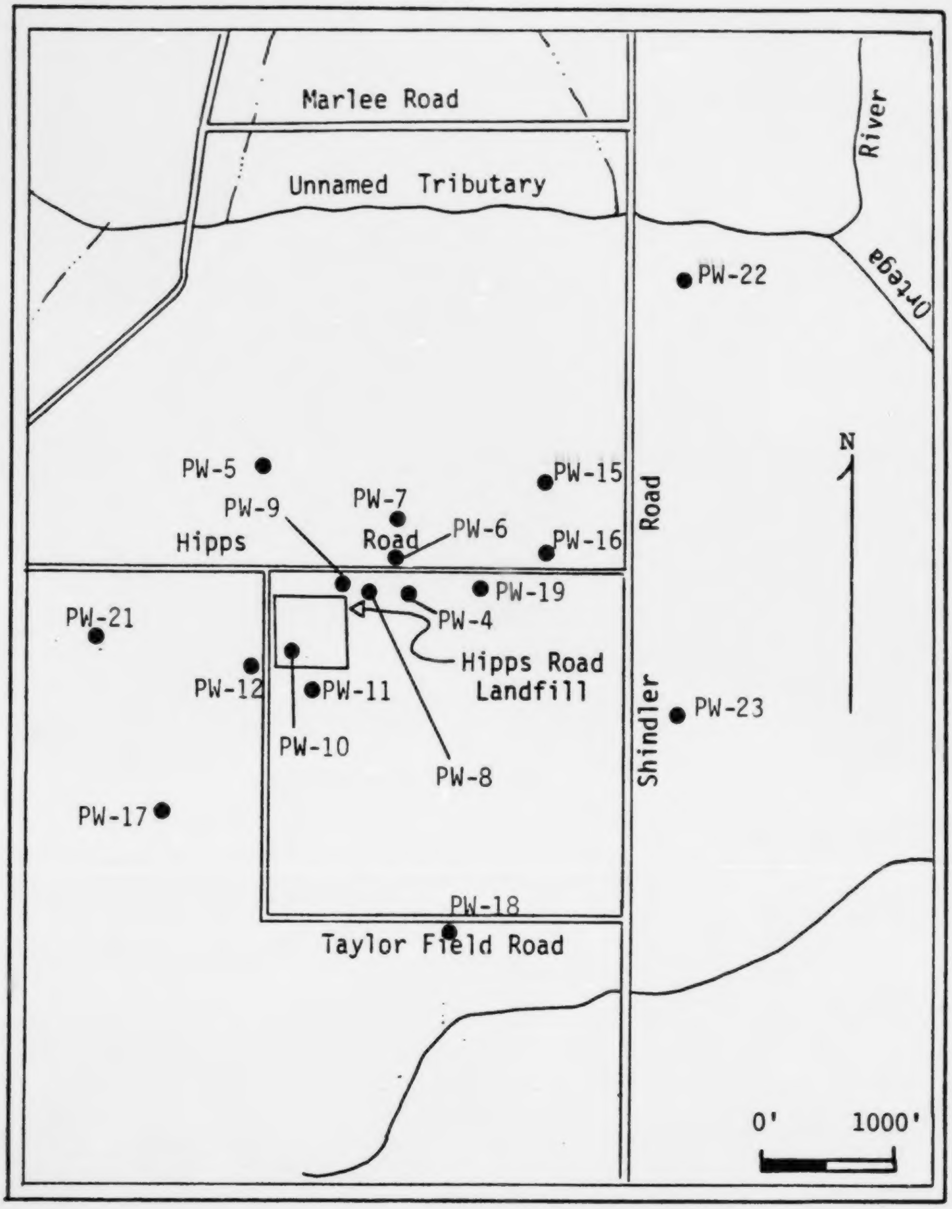

Marlee Road
Unnamed Tributary
River
Ortega
EMW-8
EMW-7
EMW-2
Hipps
Road
EMW-3
Road
EMW-6
Hipps Road
Landfill
EMW-5
Shindler
EMW-1
N
Taylor Field Road
0'
1000'

Figure 4. Location of Existing Monitoring Wells (USGS) Used During the RI Field Investigation.


Marlee Road
Unnamed Tributary
Ortega River
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PW-5
PW-15
PW-9
PW-7
Hipps Road
PW-6
PW-16
Road
PW-19
PW-21
PW-4
Hipps Road Landfill
PW-12
PW-11
Shindler
PW-23
PW-10
PW-8
PW-17
PW-18
Taylor Field Road
0'
1000'

Figure 5. Private Wells Sampled During the RI Field Investigation

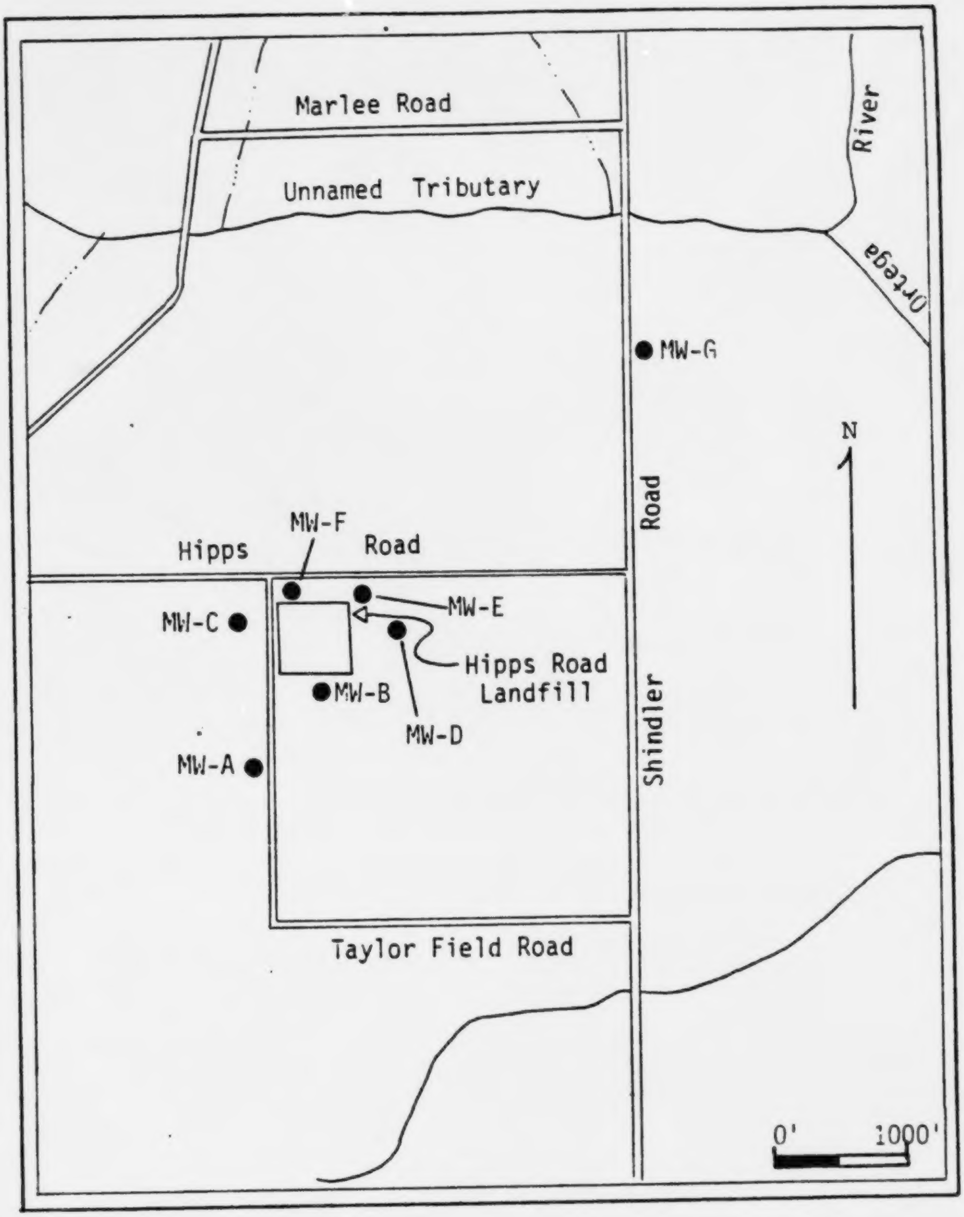
Marlee Road
Unnamed Tributary
River
Ortega
MW-G
N
Road
Shindler
MW-F
Hipps
Road
MW-E
MW-C
Hipps Road
Landfill
MW-B
MW-D
MW-A
Taylor Field Road
0'
1000'

Figure 6. Location of New Monitoring Wells Installed and Sampled During the RI Field Investigation.

Table 3. Ground Water Contaminants Identified Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-1		EMW-2			EMW-3		
	10'	40'	10'	55'	80'	10'	60'	80'
Toluene							64(68)	
Carbon Disulfide				8.9			6.0	
Chlorobenzene				4.7			(4)	
Tetrahydrofuran		11x						
Methyl Isobutyl Ketone							22	
Methyl Ethyl Ketone							9.7	
Total Xylenes				52			93	
Trans 1,2-Dichloroethane				27			24(33)	
Ethyl Benzene				24			31(68)	
Vinyl Chloride				28			31(73)	
Benzene				4.0x			3.8x(8)	
1,1-Dichloroethane							5.3(8)	
Trichloroethene							(2)	
Ethyl Ether				4.0x			7x	
Acetone			3		380		190	800
Propanol								40x
N-Nitrosodiphenyl-amine/ Diphenylamine							14	
2,4-Dimethylphenol							13x	
2-Methylphenol				46		20	26	
Methylpentanediol				20x			20x	
C-3 Alkylbenzene				10x			10x	
Oxy Bis Ethoxythane				50x			100x	
Methylnonanediol				70x				
C-5 Alkylbenzamide				10x				
C-4 Alkylbenzene							20x	
Ethylhezanoic Acid							40x	
Trimethylbicyclo-heptanone							70x	
Nepthalene							9x	20
Phenol							13x	

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 3 (cont.). Ground Water Contaminants Identified in Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-1		EMW-2			EMW-3		
	10'	40'	10'	55'	80'	10'	60'	80'
Aluminum	5500x	530x	19,000	4500	730	14,000	1100	1200
Arsenic						5.3		
Barium	r	r	57	60			110	
Cadmium	r	r						
Calcium	r	r	15,000	2900	60,000	7700	3400	5200
Chromium	r	r	35			15		
Cobalt	r	r						
Copper	r	r	25				51	32
Iron	r	r	3900	1200	310	1300	2600	710
Lead	3		38	4.3	13	11	19	14
Manganese	r	r	43	37	37	7	29	26
Magnesium	r	r	1100	1800	13,000	4000	2000	62,000
Nickel	r	r	23		24			
Potassium			1700	1100	1200	1600	750	1500
Sodium	r	13,000x	2200	51,000	5200	13,000	44,000	5000
Vanadium	r	r						
Zinc	r	r	64	42	54	68	150	61

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 3 (cont.). Ground Water Contaminants Identified in Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-4		EMW-5		EMW-6		EMW-7	
	10'	65'	30'	65'	16'	50'	10'	50'
Toluene		7.5		4.7x	41			4.4x
Carbon Disulfide				3.6x				
Chlorobenzene								
Tetrahydrofuran								
Methyl Isobutyl Ketone								
Methyl Ethyl Ketone		6.3x				5.1x		5.1
Total Xylenes				23		23		
Trans 1,2-Dichloroethane						6x		
Ethyl Benzene						3x		
Vinyl Chloride						32		
Benzene								
1,1-Dichloroethane								
Trichloroethene								
Ethyl Ether								
Acetone								
Propanol								
N-Nitrosodiphenylamine/ Diphenylamine						16x		
2,4-Dimethylphenol								
2-Methylphenol								
Methylpentanediol								
C-3 Alkylbenzene								
Oxy Bis Ethoxythane								
Methylnonanediol								
C-5 Alkylbenzamide								
C-4 Alkylbenzene								
Ethylhezanoic Acid								
Trimethylbicycloheptanone								
Nepthalene								
Phenol								

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 3 (cont.). Ground Water Contaminants Identified in Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-4		EMW-5		EMW-6		EMW-7	
	10'	65'	30'	65'	16'	50'	10'	50'
Aluminum	8500x	620x	9300x	980x	5400x	610x	2400x	560
Arsenic	18			13				
Barium	r	r	r		r	r	r	r
Cadmium								
Calcium	6700x	r	r	r	21,000x	8400x	r	r
Chromium	r	r	r	r	r	r	r	r
Cobalt								
Copper	r	r	r	r	r	r	r	r
Iron	3900x	440	700x	980x	r	5000x	r	r
Lead	15		29	4	34	4	14	3
Manganese	r	r	r		r	r	r	
Magnesium	r	r	r	r	6600x	2900x	r	r
Nickel	r	r		r	r	r		r
Potassium					5600	5100		
Sodium	r	r	8200x	10,000	50,000x	24,000x	r	5600
Vanadium								
Zinc	r	r	r	28	r	r	r	r

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 3 (cont.). Ground Water Contaminants Identified in Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-8	
	10'	50'
Toluene		
Carbon Disulfide		
Chlorobenzene		
Tetrahydrofuran		
Methyl Isobutyl Ketone		
Methyl Ethyl Ketone		
Total Xylenes		
Trans 1,2-Dichloroethane		
Ethyl Benzene		
Vinyl Chloride		
Benzene		
1,1-Dichloroethane		
Trichloroethene		
Ethyl Ether		
Acetone		
Propanol		
N-Nitrosodiphenylamine/ Diphenylamine		
2,4-Dimethylphenol		
2-Methylphenol		
Methylpentanediol		
C-3 Alkylbenzene		
Oxy Bis Ethoxythane		
Methylnonanediol		
C-5 Alkylbenzamide		
C-4 Alkylbenzene		
Ethylhezanoic Acid		
Trimethylbicycloheptanone		
Nepthalene		
Phenol		

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 3 (cont.). Ground Water Contaminants Identified in Existing (USGS) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	EMW-8	
	10'	50'
Aluminum	7000	r
Arsenic		
Barium	r	r
Cadmium		r
Calcium	3300	r
Chromium	r	r
Cobalt		r
Copper	r	r
Iron		r
Lead	23	3
Manganese	r	r
Magnesium		r
Nickel	r	r
Potassium		
Sodium	r	5500
Vanadium		r
Zinc	r	r

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 4. Ground Water Contaminants Identified in Private Wells. Concentration in Micrograms Per Liter (ug/l).

	PW-4	PW-5	PW-6	PW-7	PW-8	PW-9	PW-10
Acetone					400		
Bromodi-chloromethane							
Carbon Disulfide				4.1			
1,2-Dichloroethane			5.2				
Methyl Ethyl Ketone				300			
Methylene Chloride					5700		
Toluene		4.3	3.3		4.2		24
Bis (2-ethylhexyl) phthalate							
Aluminum	200						
Barium							
Cadmium						21	
Calcium	54,000	58,000	53,000	56,000	51,000	29,000	52
Copper		2.8		3.5	6.3	19	
Iron	700	780	1000	610	12,000		
Lead				35		690	32x
Magnesium	12,000	13,000	12,000	11,000	12,000	4400	8700
Manganese	33	40	28	34	25	34	31
Nickel		15	19		17		12
Potassium			5400				550
Sodium	5000	5000					
Tin						16x	
Zinc	8.8	68	100	700	41	13,000	120

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 4 (cont.). Ground Water Contaminants Identified in Private Wells. Concentration in Micrograms Per Liter (ug/l).

	PW-11	PW-12	PW-15	PW-16	PW-17	PW-18	PW-19
Acetone							
Bromodichloromethane	5.3						
Carbon Disulfide							
1,2-Dichloroethane							
Methyl Ethyl Ketone							
Methylene Chloride							
Toluene		8.0	8.0		5.9		5.8
Bis (2-ethylhexyl) phthalate							
Aluminum							
Barium		29			35	39	
Cadmium							
Calcium	33,000	67,000	47,000	43,000	78,000	78,000	43,000
Copper				5.2			
Iron							100
Lead				11			
Magnesium	14,000	16,000	9700	18,000	22,000	23,000	9500
Manganese	4.4	41	29	6.9	56	42	23
Nickel	18	13		18	26	23	13
Potassium	1800	570	510	510	810	630	
Sodium	5300	5900		12,000	6500	6300	
Tin							
Zinc	45	73	460	710	2	37	53

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 4 (cont.). Ground Water Contaminants Identified in Private Wells. Concentration in Micrograms Per Liter (ug/l).

	PW-21	PW-22	PW-23
Acetone			
Bromodi-chloromethane			
Carbon Disulfide			
1,2-Dichloroethane			
Methyl Ethyl Ketone			
Methylene Chloride			
Toluene			5.9
Bis (2-ethylhexyl) phthalate			27
Aluminum	250	250	280
Barium	32	11	25
Cadmium			
Calcium	75,000	43,000	59,000
Copper	11		4
Iron	720	180	60
Lead			
Magnesium	20,000	10,000	19,000
Manganese	49	20	23
Nickel	23	12	21
Potassium			
Sodium	7200	6100	6400
Tin			
Zinc	16	27	280

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 5. Ground Water Contaminants Identified in New (EPA) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	Cluster A			Cluster B			Cluster C	
	MW-1 55'	MW-2 80'	MW-13 10'	MW-7 55'	MW-8 80'	MW-16 10'	MW-3 55'	MW-4 80'
Toluene						3.2x		
Carbon Disulfide	3.2x	5.6x	4.6x		4.1x			
Chlorobenzene								
Bromochloromethane								
Bromo-dichloromethane								
C-5 Alkylbenzene Sulfenamide	20x							
C-6 Alkylphenol	20x							
Aluminum	11,000	3600	6700	1900	310	5100	800	310
Barium			33	25	30	32	17	33
Cadmium				7900	4	5		4
Calcium	9800	7300	4800		44,000	2600	3500	68,000
Chromium	17	44	7			6		
Cobalt						3		
Copper	24		6	15	9	4	12	7
Iron	23,000	1300	700	460	140	730	920	230
Lead	31	13		10		6	13	6
Manganese	40	79	96	55	25	99	83	40
Magnesium	680	24,000	1500	2800	10,000	1200	1300	12,000
Nickel					18	21	24	23
Potassium	3500	1900	2400					
Sodium	17,000	13,000	7600	12,000	8700	14,000	4800	7200
Vanadium			6					
Zinc	110	100	26	44	35	21	50	36

r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 5 (cont.). Ground Water Contaminants Identified in New (EPA) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	Cluster D			Cluster E			Cluster F		
	MW-9 55'	MW-10 80'	MW-17 10'	MW-11 55'	MW-12 80'	MW-18 10'	MW-5 55'	MW-6 80'	MW-15 10'
Toluene						3.0x			
Carbon Disulfide				8.8					2.6x
Chlorobenzene						4.2x			
Bromochloromethane									
Bromo-dichloromethane									
C-5 Alkylbenzene Sulfenamide									
C-6 Alkylphenol									
Aluminum	18,000	370	2400	7800	4600	4500	2800	380	640
Barium	83	41	29				29	42	14
Cadmium									
Calcium	26,000	60,000	8400	12,000	59,000	59,000	4600	60,000	5700
Chromium	10		14				9		4
Cobalt									4
Copper	25	6	10				29	7	4
Iron	2900	550	1100	1500	1900	1900	610	220	540
Lead	13		9	8	4.9	4.9	15	11	6
Manganese	230	78	220	130	120	120	28	33	23
Magnesium	7900	16,000	5100	3000	14,000	13,800	1900	13,000	1800
Nickel								14	
Potassium	18,000	1700	13,000		1900	19,000	840	1000	
Sodium	35,000	96,000	9600	8200	16,000	16,000	6600	19,000	8600
Vanadium	3		3						
Zinc	200	19	23	42	33	33	66	33	49

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r = data rejected under QA/QC
x = estimated value
() = local lab data

Table 5 (cont.). Ground Water Contaminants Identifed in New (EPA) Monitoring Wells. Concentration in Micrograms Per Liter (ug/l).

	Cluster G	
	MW-20 55'	MW-21 10'
Toluene	5.0	2.9x
Carbon Disulfide		
Chlorobenzene		
Bromochloromethane	4.0x	
Bromo-dichloromethane		3.7x
C-5 Alkylbenzene Sulfenamide		
C-6 Alkylphenol	910	910
Aluminum		
Barium	18	26
Cadmium		
Calcium	2800	34,000
Chromium	4	22
Cobalt		
Copper		37
Iron	880	310
Lead		8
Manganese	51	14
Magnesium	1100	12,000
Nickel		
Potassium		9200
Sodium	12,000	13,000
Vanadium		
Zinc	14	26

r = data rejected under QA/QC
x = estimated value
() = local lab data

SECTION IV
ENFORCEMENT ANALYSIS

The PRPs (Waste Management, Inc. and the United States Navy) have indicated to EPA that they are interested in performing the remedial actions at the site, provided an agreement can be reached with EPA on the scope of the remedy. Both PRPs submitted written comments on the RI/FS during the three week public comment period. Subsequent to receipt of the comments, EPA, at the request of the PRPs, met with the PRPs in Atlanta. Waste Management, Inc. (WMI) requested the meeting to provide its consultants, Golder Associates, an opportunity to present to EPA their interpretation of the RI/FS as well as their judgments and conclusions as to what remedy ought to be implemented.

Based on WMI's written comments, Golder's presentation, and comments made during the meeting by WMI's attorney, it appears that EPA and WMI may be far apart from any potential agreement on the appropriate remedy. WMI indicated that it did not believe that capping or ground water remediation was necessary but did acknowledge that some level of monitoring will be required.

It seems unlikely that WMI initially will agree to a remedy which includes ground water remediation and capping (proper closure of the landfill). The Navy did not make a presentation at the meeting and appears to concur with Golder and WMI.

EPA has determined that proper landfill closure, ground water remediation and monitoring, and institutional controls is a proper and defensible remedial action for the Hipps Road Landfill site. Therefore, EPA need not be flexible during negotiations. The purpose of the remedy is to mitigate and minimize human health risks and damage to the environment. EPA's selected remedy is the most technologically feasible, cost-effective alternative, which the Agency should support vigorously.

During the FS public comment period, WMI contended that the only remedial actions appropriate for the site were ground water monitoring and institutional controls. WMI has indicated a belief that the existing landfill cover will be sufficient if it is repaired. They have also indicated that the only issue surrounding the site involves the health threats which were eliminated when municipal water supplies were provided to the Hipps Road residents. The existing landfill cover is a thin, intermittent layer of sand which affords no protection from dermal exposure. The cleanup scenerio offered by WMI ignores the degradation of a potential water supply, which EPA must address.

The U. S. Navy, in their comments submitted during the public comment period, concurred on the need for landfill closure, institutional controls, and ground water monitoring. However, like WMI, the Navy has indicated a belief that ground water recovery is not necessary due to the low concentrations of contaminants, which will eventually enter into the surface water regime.

Although both PRPs have indicated a willingness to negotiate, the prospect for agreement with Waste Management, Inc. is poor. Negotiations will begin during the ROD finalization process. A negotiation period will be allowed per the NCP, and EPA will be prepared to initiate remedial design in the event that negotiations are unsuccessful.

SECTION V
ALTERNATIVES CONSIDERED

PUBLIC HEALTH AND ENVIRONMENTAL OBJECTIVES

Public Health. The Hipps Road Landfill has historically posed a public health threat through two routes of exposure: consumption of contaminated ground water and physical contact with the fill material. Exposure to contaminated ground water ceased when EPA and the City of Jacksonville connected local residents to the municipal water supply. The remaining exposure pathway (physical contact with the fill material) must be remediated. In addition, failure to address ground water contamination will result in the loss of a potential drinking water supply.

Environmental Concerns. Contamination of the ground water has degraded the quality of this resource. Although there is currently no threat to environmental resources, any landfill has unknown potential for further releases. Leaching of additional contaminants from the landfill may produce a contaminant loading to the ground water which could harm the environment once the ground water reaches the surface water environment. Since the ground water leaving the site discharges into an unnamed tributary of the Ortega River, there is a potential for future environmental harm. Therefore, ground water protection must be part of any remedial action proposed for this site.

ALTERNATIVES CONSIDERED

Alternatives were identified for remediating the problems surrounding the Hipps Road Landfill. These alternatives were presented in groups targeted to address a single aspect of the site. Table 6 shows the technologies considered for remediation of the ground water contamination (group A alternatives). Table 7 lists the alternatives considered for remediation of problems associated with the landfill material (group B alternatives). Table 8 lists the alternatives which address other aspects which must be considered for site remediation (group C alternatives).

Several combinations of group A, group B, and group C alternatives will provide remedial actions which comply with applicable environmental laws. One example is a combination of ground water recovery and treatment (group A), containment/encapsulation (group B), and institutional controls (group C). Ground water recovery and treatment will respond to issues raised under the Clean Water Act (CWA), the Toxic Substances Control Act (TSCA), and the Resource Conservation and Recovery Act (RCRA). These same laws are also addressed by containment/encapsulation of the landfill material. No problems were found to affect the air quality at the site, so there is no need to address issues raised under the Clean Air Act (CAA).

Table 6. Remedial Technologies Considered for Remediating Ground Water Contamination at the Hipps Road Landfill Site. Group A Alternatives.

1. Ground Water Containment
    a. Slurry Wall
    b. Grout Curtain*
    c. Sheet Piling
    d. Surface Capping
    e. Impervious Liners
    f. Hydraulic Barrier

2. Ground Water Treatment
    a. Flocculation
    b. Filtration
    c. Air Stripping
    d. Steam Stripping*
    e. Spray Irrigation
    f. Activated Carbon Adsorption
    g. Resin Adsorption*
    h. Reverse Osmosis*
    i. Ozonation*
    j. Wet Oxidation*
    k. Biological Treatment*

3. Ground Water Recovery and Disposal
    a. Pumping
    b. City Publicly Owned Treatment Works
    c. Surface Water Discharge
    d. Ground Water Recharge

(*) = Denotes technologies which were eliminated during the preliminary screening phase.

Table 7. Remedial Technologies Considered for Remediating the Landfill Material at the Hipps Road Landfill Site. Group B Alternatives.

Soil Treatment, Storage, or Disposal Technologies

1. Offsite Disposal
2. Onsite Extraction*
3. Onsite Stabilization/Solidification
4. Onsite Containment and Encapsulation
5. Onsite Incineration*
6. Venting*

(*) = Denotes technologies which were eliminated in the initial screening phase.

Table 8. Technologies Which Address Other Factors Affecting Remediation of the Hipps Road Landfill Site. Group C Alternatives.

1. No Action Alternative
2. Closure and Monitoring
3. Institutional Controls

SCREENING OF TECHNOLOGIES

Potential remedial alternatives identified for the Hipps Road Landfill site were initially screened on the basis of technical feasibility, level of protection provided to public health and cost-effectiveness. For example, the use of grout curtains was eliminated during this phase because a slurry wall will produce similar results at a lower cost. Similarly, reverse osmosis was eliminated at this point because it requires specialized operation and maintenance and because it is not cost-effective. Another example is onsite incineration which was eliminated because that technology was not applicable to the site characteristics.

The next phase of alternatives screening was based on a detailed review of each remedial alternative based on site specific criteria. The second phase review considered technical feasibility, the level of public health and environmental protection provided, and on a relative cost-estimate basis. The alternatives eliminated during this phase are listed in table 9.

The alternatives which were retained after screening were then described in detail with regard to engineering considerations, equipment needs, operation and maintenance needs, monitoring requirements, health and safety, permitting requirements, scheduling projections, and cost estimates. Alternatives shown in table 10 meet the site specific needs and are feasible for the Hipps Road Landfill site conditions.

Technologies Eliminated

Several alternatives were eliminated in the preliminary screening phase and in the detailed screening. The following is a list of remedial options which were eliminated during the screening phases and the reasons for elimination.

Ground Water Technologies

Grout Curtains. The use of grout curtains was considered as a method for containing contaminated ground water. However, slurry walls provide the same level of effectiveness for about one-third the cost.

Sheet Piling. This alternative was eliminated for the same reasons as the grout curtain.

Steam Stripping. This alternative was considered as a method for treating contaminated ground water; however, air stripping is equally effective and less costly.

Resin Adsorption. Resin adsorption is potentially feasible as a treatment method for contaminated ground water. Full scale applicability of this technology for the contaminants found at the Hipps Road Landfill site has not been proven. Carbon adsorption can produce similar efficiencies at lower costs.

Table 9. Screened Out Technologies.

Screened Out Technologies	Reason
GROUND WATER TSD TECHNOLOGIES	
GROUND WATER CONTAINMENT	
Grout Curtain	Limited Effectiveness
Sheet Piling	Limited Effectiveness
GROUND WATER TREATMENT	
Activated Carbon Adsorption	Does Not Remove Vinyl Chloride, Must be Combined with Other Technologies
Onsite Biological Treatment	High Cost and Limited Effectiveness
Spray Irrigation	Not Compatible with Site Characteristics
GROUND WATER DISPOSAL	
Ground Water Recharge	Too High Ground Water Table and Low Recharge Rate
SOIL TSD TECHNOLOGIES	
Total Offsite Disposal	High Cost
Total Onsite Stabilization/Solidification	High Cost

Table 10. Remedial Technologies Retained for Detailed Evaluation

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A. Ground Water Technologies (Group A)

1. Extraction, Air Stripping and Disposal
2. Extraction, Flocculation, Sedimentation, Filtration, and Disposal
3. Extraction and Treatment at the POTW
4. Extraction, Air Stripping, Flocculation, Sedimentation, Filtration, Carbon Adsorption, and Disposal
5. Extraction of Ground Water from Hydraulic Barrier Wells Onsite, Long Term Air Stripping, and Disposal to the Ortega River
6. Extraction of Ground Water from Hydraulic Barrier Wells, Treatment According to A-4, and Discharge to the POTW
7. Installation of an Hanging Slurry Wall around the Landfill, Surface Capping, Reverse Gradient Wells within the Slurry Wall.

B. Soils Technologies (Group B)

1. Partial Solidification and Stabilization
2. Onsite Decontamination of Bulk Solids
3. Partial Removal and Offsite Detoxification
4. Partial Solidification and Stabilization, Onsite Decontamination of Bulk Solids, Partial Removal and Offsite Detoxification, and Resource Recovery
5. Containment and Encapsulation

C. Other Alternatives (Group C)

1. No Action
2. Landfill Closure and Monitoring
3. Institutional Controls

Reverse Osmosis. Reverse osmosis systems are difficult to implement and operate. A combination of carbon adsorption and metal precipitation is equally feasible with lower costs.

Ozonation. This process requires that ozone be produced onsite. Because the production of ozone is expensive and requires specialized operations, ozonation was eliminated.

Wet Oxidation. Wet oxidation requires excessive amounts of energy, which make it unfeasible on a cost-effectiveness basis.

Activated Carbon Adsorption (alone). The ground water contaminant found to be most pervasive was vinyl chloride. Carbon adsorption cannot effectively remove this contaminant.

Disposal of Treated Ground Water Via Recharge. Recharge rates of the local soils are too low to utilize this alternative effectively. Implementation would require very low pumping rates and a large number of wells, which is not cost-effective.

Spray Irrigation. The application of spray irrigation to the contaminants found at this site will have low removal efficiencies. In addition, the land surface area required for this operation is not available, and soil permeabilities are too low.

SOIL TECHNOLOGIES

Onsite Extraction. Decontamination of the soils was not found feasible due to the large degree of variation of the contaminants and their distribution, which would require a cumbersome washing process.

Onsite Incineration. The concentrations of contaminants found in the soils are very small. Incineration would be costly when compared to the levels of contaminants present. Also, metals contamination is sufficently high to expect that air emissions will be in excess of existing air quality standards.

Venting. The levels of volatile organic compounds found in the soils are low. The major threat is posed by the potential presence of containerized compounds. Venting would not address this concern.

Biological Treatment. The low levels of contaminants found at the Hipps Road Landfill cannot be addressed by biological treatment in a cost-effective manner.

Offsite Disposal. Off-site disposal produces unnecessary risks during excavation and transportation. The costs are also prohibitively high.

Onsite Solidification and Stabilization. This technology produces unnecessary risks during excavation. The costs are prohibitively high.

ALTERNATIVES RETAINED

The technologies which were retained for final consideration as remedial responses to the conditions at the Hipps Road Landfill site are listed in table 10. Each alternative was evaluated based on technical feasibility, environmental impact, and public health concerns (Table 11). The present worth and operations and maintenance costs associated with each alternative are presented in table 12. The remedial alternatives found to be feasible for this site are described below.

GROUND WATER TECHNOLOGIES

Alternative 1 - Extraction, Air Stripping, and Disposal. This alternative involves implementation of a ground water recovery system designed to recover the existing plume of contaminants. The contaminated ground water will be passed through a counter current air column which will enhance the exchange of organics from the aqueous stream to the effluent air stream. A high degree of water detoxification is possible. The clean water would be discharged to the Ortega River for disposal. This alternative is not expected to emit organic vapors in levels which would cause environmental or public health concerns due to low contaminant levels and rapid dispersion. However, site specific testing would be required.

Alternative 2 - Extraction, Flocculation, Sedimentation, Filtration, and Disposal to the Ortega River. Extraction of the ground water would be implemented with a system designed to recover the existing plume of contaminants. The ground water would be flocculated using a chemical additive which would coagulate the contaminants and the colloids would be allowed to settle out of the solution. The effluent solution would then be passed through a filter to remove solids which are too small to settle from the water column. The effluent water would be discharged to the Ortega River.

Alternative 3 - Extraction and Treatment at the Publicly Owned Treatment Works. Extraction of the ground water would be implemented with a system designed to recover the existing plume of ground water contaminants. The untreated ground water would be discharged to nearby municipal sewer lines for treatment at the local POTW. Disposal to the POTW is not expected to have an effect on the level of volatile organic compounds in the treatment plant effluent, due to dilution at the POTW head works. Also, the concentration of volatile organic compounds would diminish during transport to the treatment plant as a result of aeration. The level of ground water contamination is sufficently low to allow the POTW to accept the wastes without violation of the operational permits. The flow rate will not add significant hydraulic loading at the POTW.

Alternative 4 - Extraction, Air Stripping, Flocculation, Filtration, Carbon Adsorption, and Disposal to the Ortega River. This alternative combines Alternatives 1 and 2, with the addition of an activated carbon filter. The addition of carbon adsorption adds a final finishing process which would insure the quality of the water being discharged to surface waters and provides an improved level of protection for the environment.

Table 11. Summary of Evaluation of Remedial Alternatives.

Alternative	Technical Feasibility	Environmental Impact	Public Health Concerns	Institutional Requirements
A-1 Air Stripping Cost Confidence Level ± 50% Unit Cost Range = 9.05 to 12.20 $/1,000 gal.	Common equipment and procedures used for this alternative. Expert technical personnel required to supervise operation. Cleanup effectiveness must be verified by effluent monitoring. Only provides VOC reductions. Metals and PCBs are not removed by this operation.	Air stripping volatile organic compounds from ground water will minimize adverse effects to the aquifer from VOCs. Does not resolve the environmental problems of metals and PCB contamination.	The risk of exposure to effluent vapors from the process exists for those working onsite. The risk of exposure to ground water contamination due to VOCs is significantly reduced.	Must comply with Clean Air Act, pretreatment standards for POTW, Federal Water Quality Criteria, and NPDES guidance.
A-2 Flocculation, Sedimentation, and Filtration Cost Confidence Level ± 50% Unit Cost Range = 6.90 to 7.80 $/1,000 gal.	In addition to specifications for A-1 above, this option removes heavy metals.	Flocculation, sedimentation and filtration heavy metal will minimize adverse effects to the aquifer from continued metals contamination.	Minimal risk exists for those working on the process. The risk of exposure to ground water contamination due to metals is significantly reduced.	Same as A-1 above (except Clean Air Act compliance does not apply.) Must also comply with DOT standards for hazardous waste transport of metal sludges transport rules (RMCL) and Guide to Disposal of Chemically Stabilized and Solidified waste.
A-3 Treatment at Wastewater Plant Cost Confidence Level ± 50% Unit Cost Range 6.50 to 8.90 $/1,000 gal.	Common equipment and procedures used for this alternative. Places actual task of removing or neutralizing contamination in hands of secondary party.	Treatment at wastewater plant will minimize adverse effects to the aquifer from VOCs and metal contamination.	Minimal risk. This remedial action eliminates the risk of having additional contamination reach the underlying aquifer.	Does not need to comply with Hazardous Waste Regulations, Standards, or criteria.
A-4 Flocculation, Sedimentation, Filtration, Air Stripping and Carbon Adsorption Cost Confidence Level ± 50% Unit Cost Range 16.20 to 17.80 $/1,000 gal.	Technologies and equipment used in this process are well proven. requires expert personnel due to numerous process stages. This alternative provides the highest removal efficiency of contaminants.	Removal of VOCs, PCBs, and heavy metals will minimize all adverse effects to the aquifer.	This combination of A-1 and A-2 above, provides highest degree of public health protection.	Same as A-1 above (except also must comply with DOT transport standards, Hazardous Waste Regulations, and Transport Rules.

Table 11 (cont.). Summary of Evaluation of Remedial Alternatives.

Alternative	Technical Feasibility	Environmental Impact	Public Health Concerns	Institutional Requirements
A-5 Air Stripping and POTW Discharge Cost Confidence Level ± 50% Unit Cost Range 9.85 to 10.72 $/1,000 gal.	Same as A-1	Same as A-1	Same as A-1	Same as A-1
A-6 Full Treatment and River Discharge Cost Confidence Level ± 50% Unit Cost Range 7.86 to 16.89 $/1,000 gal.	Technologies and equipment used in this process are well proven, requires expert personnel due to numerous process stages. This alternative provides the highest removal efficiency of contaminants.	Removal of VOCs, PCBs, and heavy metals will minimize all adverse effects to the aquifer.	This combination of A-1 and A-2 above, provides highest degree of public health protection.	Same as A-1 above (except also must comply with DOT transport standards, Hazardous Waste Regulations, and Transport Rules.
A-7 Slurry Wall, Surface Capping, and Reverse-Gradient Wells Cost Confidence Level ± 50% Unit Cost Range 10.30 to 13.09 $/1,000 gal.	Common equipment used for capping. Trained personnel required for slurry wall installation.	Contaminants in the landfill are stored, not destroyed.	Reduces the possibilities of dermal contact with landfill material. Controls possible future contaminant releases.	Must comply with Hazardous Waste Regulations and RCRA Design Guidelines.
B-1 Partial Solidification and Stabilization Cost Confidence Level ± 50% Unit Cost Range = 76.30 to 96.50 $/ton	Common equipment and procedures used for soil excavation, solidification and stabilization. Cleanup effectiveness must be verified with leach tests.	Solidification/stabilization will provide remediation for heavy metals contamination. Effects on VOCs are unknown, but thought to be marginal.	The risk of exposure to workers during excavation and related activities is high. After solidification/stabilization, the risk of exposure to contaminated soil is low. Further contamination of ground water with heavy metals will be minimized. Future releases of VOCs could be possible.	Must comply with all hazardous waste regulations, EPA RCRA design guidelines, guide to disposal of chemically stablized and solidified waste, and pretreatment guidance which apply to this alternative.

Table 11 (cont.). Summary of Evaluation of Remedial Alternatives.

Alternative	Technical Feasibility	Environmental Impact	Public Health Concerns	Institutional Requirements
B-2 Bulk Solids Decontamination Cost Confidence Level ± 50% Unit Cost Range = 43.90 to 72.50 $/ton	Similar to B-1 above for excavation, etc. Decontamination effectiveness is questionable due to unknown nature of bulk solids.	Will produce wastewater requiring treatment. (Waste produced onsite is controllable.) Unproven methods make environmental impact estimates difficult.	Risk during site work is high. Extent of risk abatement is unknown. The procedure should diminish the potential for further ground water contamination from both heavy metals and VOCs, but the degree to which the overall risk is diminished is difficult to estimate.	Same as B-1 above (except also must comply with the Clean Air Act, pretreatment standards for discharge into POTW, Federal Water Quality Criteria, and NPDES guidance.)
B-3 Partial Removal and Offsite Detoxification Cost Confidence Level ± 50% Unit Cost Range = 42.60 to 71.80 $/ton	Common equipment and procedures used for soil excavation and trucking. Cleanup effectiveness must be verified with leach tests.	Removal is effective means of mitigating the problems of contamination at the site. Contamination is removed not destroyed.	Same as B-1 for workers. Would minimize the risk of future contamination. Possibility of future releases from contamination at designated disposal site or during transport.	Same as B-1 above (except also must comply to DOT Hazardous Materials and Transport Rules (RMCL) but does not apply to disposal chemically stabilized and solidified waste.)
B-4 Combination of B-1, B-1, and B-3 Cost Confidence Level ± 50% Unit Cost Range = 74.90 to 108.10 $/ton	Same as B-1, B-2, and B-3 above.	Heavy metals not removed during detoxification are immobilized during solidification. Possibility of continued VOC contamination remains.	Combination of B-1, B-2, and B-3 above.	Same as those required for alternatives B-1, B-2, and B-3.
B-5 Containment and Encapsulation Cost Confidence Level ± 50% Unit Cost Range = 52.80 to 83.70 $/ton	Common equipment and procedures used for soil excavation, containment, and encapsulation. Trained personnel required for liner installation.	Contaminants are stored, not destroyed or removed. Thought to be less effective than stabilization, or treatment.	Same as B-1 (excluding stabilization aspect.) Reduces, but does not minimize risk. Entails storage of waste, in its present form, onsite. Potential for future release.	Must comply with Hazardous Waste Regulations and EPA RCRA Design Guidelines.

Table 11 (cont.). Summary of Evaluation of Remedial Alternatives.

Alternative	Technical Feasibility	Environmental Impact	Public Health Concerns	Institutional Requirements
C-2 Closure and Monitoring	Placement of cover material and monitoring wells is considered common engineering practice.	No reduction in contaminant transport. Increases runoff. Slows vertical movement of ground water through the landfill.	Reduces the chance of dermal contact with landfill material. Also reduces the possibility of soil ingestion by children.	Restriction on domestic use of of ground water from the surficial aquifer. Closure of private wells.
C-3 Institutional Controls	Common practice.	No reduction in ground water transport.	Reduces chance of contact with contaminated soil and ground water.	Deed modification. Restriction on domestic use of ground water from the surficial aquifer. Closure of private wells. Fencing of landfill.

Table 12. Cost Estimates for the Retained Remedial Alternatives.

Alternative	Cost, $1,000 Construction Present Worth	Cost $1,000 O&M Present Worth[1]	Cost, $1,000 Present Worth Total
GROUND WATER			
E-1 Extraction Wells	355	0	355
E-2 Hydraulic Barrier Wells	213	0	213
D-1 Discharge to Ortaga River	252	0	252
D-2 Discharge to POTW	435	700	1135
A-1 Air Stripping	2,120	0	2,120
A-2 Flocculation, Sed. & Filt.	1,674	0	1,674
A-3 Treatment at the POTW	736	700	1,436
A-4 Combination of A-1 & A-2 plus Carbon Adsorption	3,920	0	3,920
A-5 Long-Term Air Stripping and POTW Disposal (2)	1,219	8,363	9,582
A-6 Long-Term Treatment and River Disposal (2)	1,467	13,159	14,626
A-7 Slurry Wall, Capping, and Reverse-Gradient Wells[2]	3,800	1,263	5,063
SOILS			
B-1 Part. Solidification & Sta.	13,535	54	13,589
B-2 Bulk Solids Decontamination	8,697	54	8,751
B-3 Part. Removal-Offsite Detox.	8,453	54	8,507
B-4 Combination of B-1, B-2, & B-3	13,670	54	13,724
B-5 Containment & Encapsulation	9,268	672	9,940
GENERAL			
C-2 Closure Plan and Monitoring	530	530	1,060
C-3 Institutional Alternative	527	54	581

(1) O&M costs for activities showing $0 value are indicated with capital costs. It is assumed that O&M for these activities last only one year and is handled by the cleanup contractor.

(2) Included at the request of FDER.

Alternative 5 - Extraction of Ground Water from Hydraulic Barrier Wells, Long Term Air Stripping, and Disposal to the POTW. This alternative is similar to Ground Water Alternative 1, with the exception that the ground water recovery system would be designed to capture the leading edge of the contaminant plume. The recovery well system would be maintained indefinitely to provide protection from the threat of future releases by the landfill to the ground water environment. Disposal of the ground water would be to the nearby POTW rather than to the Ortega River to insure that there are no threats posed to the environment.

Alternative 6 - Extraction of Ground Water from Hydraulic Barrier Wells, Onsite Treatment According to Ground Water Alternative 4, and Discharge to the Ortega River. This alternative would use a ground water recovery system designed to capture the leading edge of the contaminant plume. The recovery well system would be maintained indefinitely to provide protection from the threat of future releases by the landfill to the ground water environment. Full treatment of the ground water would be implemented to insure that waters being discharged to the Ortega River would not adversely impact the surface water environment.

Alternative 7 - Installation of a Hanging Slurry Wall around the Landfill, Surface Capping, Reverse Gradient Wells within the Slurry Wall, and Discharge to the POTW. This alternative would use a hanging slurry wall around the landfill perimeter to prevent leachate from leaving the site. A surface cap would be installed to reduce the infiltration of rain water, and to reduce the level of leachate generation. Since there is no accessable fully confining unit in which the slurry wall can be based and since the Remedial Investigation demonstrated a downward component of ground water flow under the landfill, reverse gradient wells would be installed to prevent leachate from migrating under the slurry wall. Low levels of ground water contaminants are expected from the landfill so that discharge to the POTW would not adversely affect municipal operations.

SOIL TECHNOLOGIES

Alternative 1 - Partial Solidification and Stabilization. Partial solidification and stabilization would entail that the soil component of the fill material would be excavated and combined with a solidifying agent to reduce the level of leachate emanating from the contaiminated soils. This may improve the handling and physical characteristics of the wastes, decrease the surface area of contaminated materials, and limit the solubility or detoxify the hazardous constituents of the wastes. The solidifying agent would entail using either a cement based process or some other pozzalanic process. Stabilization would involve the use of inorganic chemicals which produce insoluble compounds which are not affected by changes in site specific conditions. However, the hazardous constituents would remain within the monolithic block of material generated during the process.

Alternative 2 - Onsite Decontamination of Bulk Solids. The contents of the landfill include a large quantity of metalic objects which cannot be addressed in other alternatives which remediate the soils component of the fill material. This alternative would involve excavation of the fill material, transport to a decontamination area, and decontamination of bulk solids with steam or solvents. The decontaminated solids would be replaced into the landfill or disposed of at a local sanitary landfill, and decontamination waste streams would be treated in a temporary onsite treatment system.

Alternative 3 - Partial Removal and Offsite Detoxification. This alternative would require excavating the most highly contaminated soils from the landfill, and offsite treatment by incineration for orgainics or landfilling for materials which cannot be incinerated. However, the nearest facility to which the wastes may be transported for treatment or disposal is approximately 600 miles from the site.

Alternative 4 - Partial Solidification and Stabilization, Onsite Decontamination of Bulk Solids, Partial Removal and Offsite Detoxification, and Resource Recovery. This alternative is a combination of Soil Technologies 1, 2, and 3, with the addition of resource recovery. Resource recovery would involve certification that decontaminated metals are free of hazardous wastes and would then be presented for recycling.

Alternative 5 - Containment and Encapsulation. This alternative would involve the excavation of the landfill contents and sealing the base of the landfill with an impermeable liner. The landfill materials would be re-deposited into the landfill and an impermeable cover would be placed over the surface of the landfill. The purpose of this alternative is to limit the leachability of toxic materials by constructing a physical barrier which separates the toxic materials from the environment.

OTHER ALTERNATIVES

Alternative 1 - No Action. The No Action alternative implies that the site poses no threat to public health, welfare, or the environment and that EPA will undertake no remedial response at the site. This alternative was considered under the mandates of the National Contingency Plan, however, the threats posed by the site and identifed in the Remedial Investigation indicate that the No Action alternative is unacceptable. Therefore, this alternative will not be addressed further.

Alternative 2 - Landfill Closure and Monitoring. This alternative will include the placement of a high integrity cover over the landfill, closing the existing private wells in the area, and monitoring the ground water for further releases. This option will remove the potential for human contact with the landfill materials and insure that the nearby residents will not consume contaminated ground water.

Alternative 3 - Institutional Controls. This alternative includes any activity which would facilitate remedial action and the protection of any remedy implemented during the remedial action. This option may include, but is not limited to, installation of a perimeter fence around the site, institution of a drilling ban within the affected area, relocation of affected residents under the Federal Emergency Management Agency, and closure of existing monitoring wells. Specific institutional controls would be identified under the remedial design phase.

SECTION VI
COMMUNITY RELATIONS ACTIVITIES

In May 1983, the first public meeting was held by concerned citizens who live in the Hipps Road Landfill vicinity. The citizens formed an organization known as the Jacksonville Heights Concerned Citizens Against Contaminated Water (JHCCACW). The organization is now known as Jacksonville Citizens Against Contaminated Water (JCACW). The formation of the JCACW was initiated in reaction to what was perceived as a lack of response to contamination of private water supplies by the City of Jacksonville.

JCACW has been active in ensuing years. Two members (Spokesperson Yvonne Woodman and Secretary Gail Speicher) testified before the House of Representatives Environment, Energy, and Natural Resources Subcommittee of the Committee on Government Operations on June 22, 1983. Their testimony dealt with the effects of ground water contamination and the lack of responsibility assumed by the waste generators and government officials (See appendix A).

On July 9, 1983, Yvonne Woodman met with EPA Administrator William Ruckelshaus, along with 14 representatives from other Superfund sites. The meeting was held to inform Mr. Ruckelshaus of the pervasive citizen concerns surrounding Superfund sites.

The Hipps Road Landfill was finalized on the NPL in September 1984. That same month, EPA obligated funds for the RI/FS. In October 1984, the REM II contractor was tasked to perform the RI/FS.

Region IV has conducted extensive community relations activities at the Hipps Road Landfill site. On November 13, 1984, EPA officials and their contractors met informally with the Hipps Road residents. The meeting was held to give the residents an opportunity to present their concerns and to allow EPA to explain what actions would be conducted under the RI/FS. One major concern raised by the citizens was a request that JCACW leaders be informed whenever "outsiders" will be in the vicinity. This request stemmed from previous events in which unmarked government vehicles were seen standing idly in the area. EPA subsequently informed the JCACW leadership of any official EPA activity in the area.

On May 23, 1985, EPA held an informal public meeting with the Hipps Road area residents to present the final RI/FS work plan. The meeting was preceded by the release of a Fact Sheet in April 1985 and by a press release. Copies of the Work Plan, Community Relations Plan, and auxiliary documents were placed in the local information repository at the Webb Wisconnett Branch of the Jacksonville Public Library. Copies of the same documents were provided directly to the JCACW officers.

From January 1985 through September 1985, EPA conducted an immediate removal response in which all area residents who were using ground water resources were connected to municipal water supplies. This eliminated the fear of continued exposure to contaminated drinking water.

Throughout the RI/FS process, EPA frequently maintained contact with JCACW officers with telephone calls and onsite visits. Each final document was provided to the JCACW officers and the information repository.

Once the draft FS was complete, EPA issued a Fact Sheet and the formal public meeting was scheduled. JCACW was given a copy of the FS two and a half weeks before the public meeting, which was held on May 7, 1986. The public meeting initiated the FS public comment period.

During the public comment period, EPA received a large response. The primary mechanism used by JCACW was a petition form letter which was submitted by approximately 150 persons. Several personal letters were also received. Response to the comments was made via the Responsiveness Summary which was released in July 1986. (Appendix B).

The major remaining issue of public concern surrounds the Public Health Evaluation and the assessment conducted by ATSDR-CDC. The types and levels of contaminants encountered during the RI field investigation and the period of exposure indicated that the population is not at risk from contaminated ground water since that route of exposure has been eliminated. The predominant contaminants were VOC's which the body rapidly excretes when exposure ceases. Therefore, there is no basis on which CDC can perform a health survey. The citizens disagree with the ATSDR-CDC position and the issue is likely to remain active.

SECTION VII
CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

Environmental laws which may be applicable or relevant to the remedial activity are:

-- Safe Drinking Water Act (SDWA)
-- Resource Conservation and Recovery Act (RCRA)
-- Toxic Substances Control Act (TSCA)
-- State of Florida Administrative Code Chapter 17-7 - Landfill Closure (17-7 FAC)
-- 1980 EPA Water Quality Criteria
-- Pre-treatment Guidance for Disposal at the POTW

In 1983, the City of Jacksonville extended public water supply lines into the Hipps Road area. Several residents elected to connect to the city supplies at that time. In 1985, EPA conducted an emergency response which provided all remaining Hipps Road Landfill area residents with municipal water supplies. Thereby, the local residents were provided with safe drinking water per the SDWA.

Design and implementation of the landfill closure will be conducted in accordance with Subtitle D of RCRA and Chapter 17-7 FAC. This action includes capping the landfill in accordance with RCRA requirements, recovery of contaminated ground water, and long-term ground water monitoring. These three requirements are included in the selected remedy.

Because of the potential uses for the surficial aquifer, ground water recovery will be conducted until the ground water quality is in compliance with the standards established under the SDWA. Contaminants which are not addressed under the SDWA will be removed until compliance with the 1980 Water Quality Criteria Human Health Standards is reached. Any contaminants for which there are no standards will be removed to levels which are mutually agreeable to EPA, Florida Department of Environmental Regulation, and the City of Jacksonville Bio-Environmental Services Division. These levels will be defined during the Remedial Design phase of Remedial Implementation. Any state water quality standards which are more stringent than federal standards will have precedence.

The recovered ground water will be discharged to the local POTW for treatment and disposal. Discussions regarding access to the POTW were held in November 1985 with officials from the Jacksonville Public Works Division. The City of Jacksonville indicated a willingness to accept the effluent for treatment. Pretreatment standards are the operational standards by which discharge to the POTW will be assessed. If the contaminant levels are above the pretreatment standards, dilution of the contaminated ground water will be acceptable. (Appendix C).

The implementation of institutional controls will require that the existing local drilling ban enacted by the Jacksonville Bio-Environmental Services Division (BESD) be continued. BESD officials have indicated a willingness to implement this restriction.

During the field investigation, ground water samples indicated the presence of PCB's in concentrations above the partitioning coefficient in water. The presence of PCB can probably be attributed to the unfiltered water samples in which PCBs adhered to the soils. However, concentrations detected were several orders of magnitude below levels which would invoke TSCA regulations.

The Natural Resource Damage Assessment, conducted by the Fish & Wildlife Service concluded that no federal trustee resources have been impacted by the site (Appendix D). There are no threatened wetlands, and the site is above the 500-year floodplain (Figure 7).

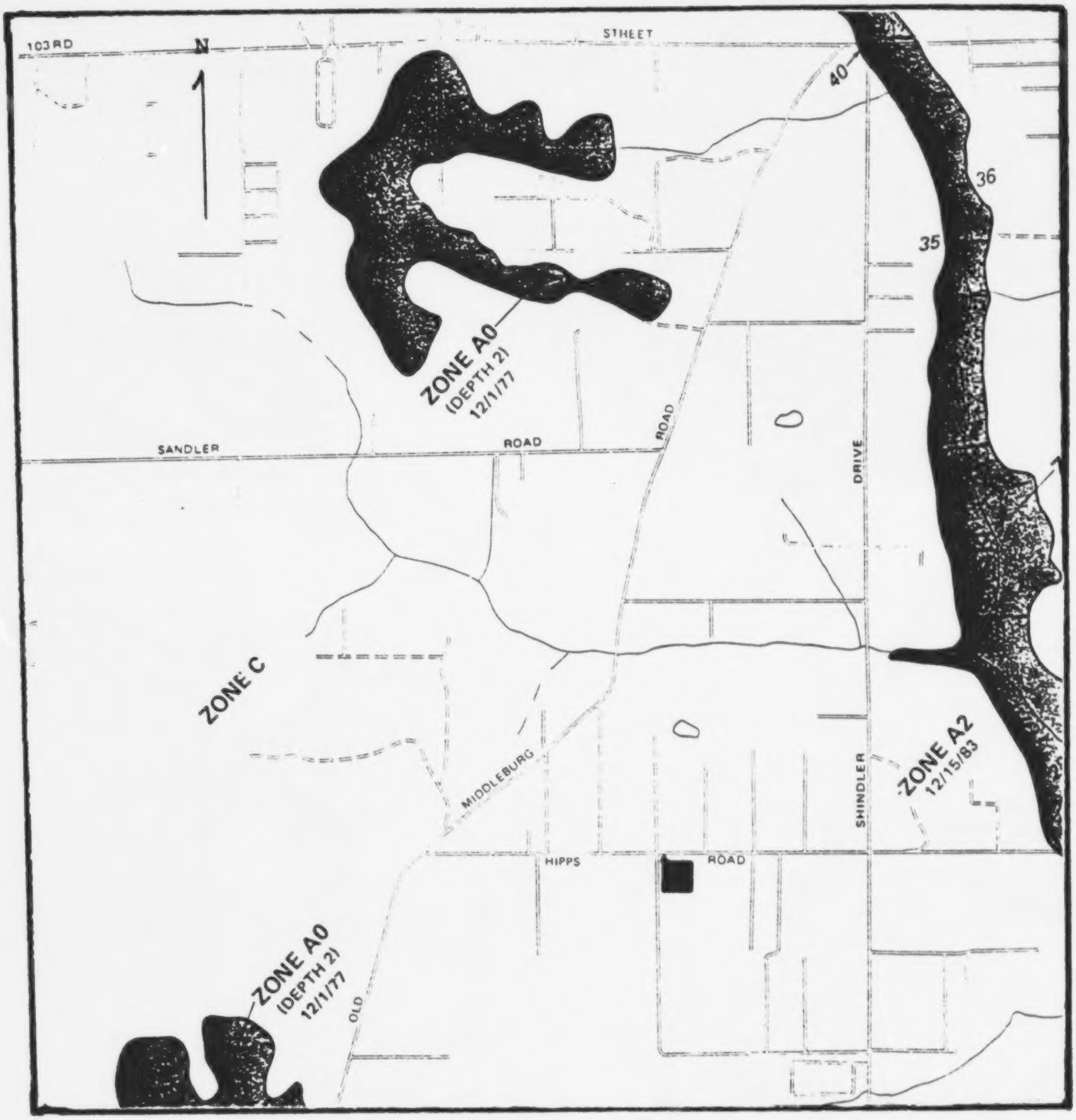
103RD
STREET
N
40
36
35
ZONE A0
(DEPTH 2)
12/1/77
SANDLER
ROAD
ROAD
DRIVE
ZONE C
MIDDLEBURG
SHINDLER
ZONE A2
12/15/83
HIPPS
ROAD
ZONE A0
(DEPTH 2)
12/1/77
OLD

Figure 7. Hipps Road Landfill site flood potential map. Zones designated with the prefix "A" indicated areas of 100-year flood levels (dark shaded areas). Zones with the prefix "B" indicate areas between the 100 and 500-year floods (light shaded areas). Zones with the prefix "C" are areas of minimal flooding. National Flood Insurance Program Flood Insurance Rate Map #120077-0150-D.

SECTION VIII
RECOMMENDED ALTERNATIVE

SELECTED REMEDY

The recommended alternative is a combination of alternaties A-3, C-2, and C-3 (Table 5-1, FS Report). This comprises ground water recovery and treatment at the POTW, proper landfill closure, and institutional controls.

The ground water recovery system would entail the installation of a recovery well network and construction of a pipe line to access the POTW. The point of connection lies approximately 20,000 feet from the site. The recovery system will capture the existing plume of ground water contamination to prevent the degradation of additional portions of the aquifer. Once the clean-up goals, as outlined in Section VII of this Summary of Remedial Alternative Selection are attained, the recovery will be discontinued and the ground water monitoring phase will be initiated. If monitoring indicates further release of contaminants to the ground water, the recovery operation will be reinstituted. Each recovery well will have an individual pump so that future recovery operations (if necessary) can be implemented to address new release conditions.

The landfill cap will be constructed in a manner consistent with all applicable Federal, State, and local regulations. The cap will preclude physical contact with the landfill contents and will reduce the vertically downward hydraulic gradient caused by the ground water "mounding" due to infiltration.

Institutional controls may include, but are not limited to, fencing the site, continuance of the local well drilling prohibition, land use restrictions, grouting existing private wells, and public or PRP acquisition of private lands. Property on which the landfill is located is residential and two homes are physically on the landfill. A third home is immediately adjacent to the landfill. A total of seven (7) residential lots will be affected in part or in whole by implementation of this remedy.

Ground water monitoring will be conducted quarterly for the first two years. If no further releases are identified during that time, monitoring will then occur semi-annually. All analyses will consist of full priority pollutant scans. If the recovery systems need to be reactivated in the future, the subsequent monitoring scenerio will be initiated with two years of quarterly monitoring.

Operation and maintenance (O&M) will include upkeep of the landfill cap, ground water monitoring, and maintenance of the ground water recovery system. O&M will continue for 20 years after the final ground water recovery operation. EPA will provide operation and maintenance costs for one year after completion of the remedial action. After that time, the State of Florida or its designee will assume responsibility for operation and maintenance associated with the site.

COST-EFFECTIVENESS

Section 40 CFR Part 300.68 (j) states:

The appropriate extent of remedy shall be determined by the lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e. the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment.

The remedy selected for remediation of the Hipps Road Landfill site is consistent with this requirement. All other feasible alternatives which perform equal or superior to the selected remedy are more expensive. All of the less costly alternatives presented in the Hipps Road Landfill Feasibility Study are either not sufficient to fully remediate the health and environmental threats posed by this site or are not consistent with applicable environmental laws. A summary of feasible alternatives which were rejected is presented in table 13.

The selected remedy is estimated to cost between $3.9 million and $4.4 million.

Table 13. Summary Table of Feasible Alternatives and Cost-Effectiveness Comparison. Cost in Millions of Dollars.

Remedial Alternative	Reason for Non-Selection	Estimated Cost Range
A-1. Air Stripping	Less cost effective than treatment at the POTW and failure to address all ground water contaminants	1.6 to 3.3
A-2. Flocculation Sedimentation and Filtration	Equally cost-effective when compared to treatment at the POTW but fails to address all ground water contaminants	1.3 to 1.8
A-3 (RA-6). Ground Water Treatment at the POTW	The recommended alternative for ground water remediation	1.3 to 1.9
A-4 (RA-1). Combination of RA-1 and A-2, plus Carbon Adsorption	Addresses all ground water contaminants, but is expensive compared to treatment at the POTW	3.1 to 4.0
A-5. Air Stripping and Disposal at POTW	Less cost-effective than treatment at the POTW and failure to address all ground water contaminants	9.0 to 10.6
A-6. Full Ground Water Treatment and Disposal to the POTW	Less cost-effective than treatment at the POTW and failure to address all ground water contaminants	3.2 to 17.3
A-7. Slurry Wall, Surface Capping, and Reverse Gradient Wells	Expensive and not sufficient alone	4.1 to 6.9
B-1. Partial Solidification and Stabilization	Technically effective but expensive compared to capping and institutional controls	8.4 to 15.0
B-2. Bulk Solids Decontamination	Must be used in conjunction with B-1 and is not cost-effective compared to capping and institutional controls	4.1 to 12.7
B-3. Partial Removal and Off-Site Detoxification	Insufficient alone, must be used in conjunction with B-1. Not cost-effective compared to capping and institutional controls	4.0 to 12.3
B-4. Combination of B-1, B-2, B-3, and Resource Recovery	Fully addresses landfill contents but expensive compared to capping and institutional controls	7.7 to 18.7
B-5. Containment and Encapsulation	Effectively addresses landfill problems, but is expensive compared to capping and institutional controls	5.5 to 14.2

Table 13 (cont.). Summary Table of Feasible Alternatives and Cost-Effectiveness Comparison. Cost in Millions of Dollars.

Remedial Alternative	Reason for Non-Selection	Estimated Cost Range
C-2 (RA-2) Closure Plan and Monitoring	Insufficient alone to address effects posed by the landfill although it is cost-effective	1.0 to 1.5
C-3 (RA-3) Institutional Controls	Alone, this option fails to remediate any aspects of the site, although it is inexpensive	0.6 to 1
RA-4. Combination of C-2 and C-3	Cost-effective but fails to address ground water contamination	1.6 to 2.5
RA-5. Combination of A-4, C-2, and C-3	Feasible remedy which addresses all aspects of the site, but not cost-effective	5.0 to 6.2
RA-7. Combination of A-3 and C-2	Insufficient to deal with all aspects of the site although relatively inexpensive	2.4 to 3.4
RA-8. Combination of A-3 C-2, and C-3	Addresses all aspects of the site in the most cost-effective manner	3.9 to 4.4
RA-9. Combination of A-4 and C-2	Expensive compared to RA-8 and fails to include cost of institutional controls	10.3 to 11.6
RA-10. Combination of A-6 and C-2	Expensive compared to RA-8 and fails to include cost of institutional controls	8.4 to 17.5
RA-11. Combination of A-3 and A-7	Addresses all aspects of the site, but is expensive compared to RA-8	4.7 to 7.5

SECTION IX
OPERATION AND MAINTENANCE

The remedy selected for the Hipps Road Landfill site is a combination of three alternatives: ground water recovery and treatment at the POTW (A-3), landfill closure and monitoring (C-2), and institutional controls (C-3). Each aspect of the remedy has unique O&M requirements.

GROUND WATER RECOVERY AND TREATMENT AT THE POTW

This remedial alternative requires discharge of recovered ground water to the local sanitary sewer line located on 103rd Street. Operation activity will include sampling the untreated ground water at intervals to be negotiated with the City of Jacksonville Public Works Department to insure that the pretreatment criteria are not exceeded and to monitor flow rates. If the contaminant concentrations exceed the pretreatment criteria, the operator will adjust withdrawal to provide dilutants to the recovered ground water and readjust flow rates.

Maintenance required after completion of ground water recovery will include bi-annual inspection of the pumps, monitoring equipment, and pipe lines to insure that the ground water recovery system is in working order. This is a contingency in case the landfill should produce further contaminants in excess of the recovery criteria. The maintenance activity will continue for 20 years from the last recovery operation.

LANDFILL CAPPING AND MONITORING

Once the cap is in place, the operations will entail bi-annual inspections of the cap. If the integrity is breached, repair operations will be instituted to insure that the contours are restored. Maintenance will include keeping the vegetative cover intact, prevent deep root plants from encroaching on the cap, and keeping the landfill drainage system in proper condition.

O&M for the cap will continue for 20 years from the final ground water recovery operation.

INSTITUTIONAL CONTROLS

The institutional controls include installation of a fence to restrict access and protect the cap from encroachers. O&M will require bi-annual inspection of the fence and repair as needed.

FUNDING

The State of Florida has instituted a program for dealing with hazardous waste sites. This program is designed on the CERCLA model and is operated similarly to Superfund through the Florida Department of Environmental Regulation. The State of Florida has agreed to fund 10% of the cost for implementing the selected remedial action.

The relocation of residents who are affected by the implementation of the selected remedial action will be conducted by the federal government under Federal Emergency Management Agency (FEMA), with acquired lands being deeded by the federal government to the State of Florida.

After the remedial action has been implemented, EPA will provide O&M costs for one year. At the end of the first year, the State of Florida will assume the responsibility for O&M. A letter expressing concurrence by the State of Florida is in Appendix E.

These arrangements will be negated should the PRPs agree to undertake the RD/RA operations as outlined in this document.

SECTION X
PROJECT SCHEDULE

The schedule for the RD/RI phases of the Hipps Road Landfill site remediation are dependent on the success of enforcement negotiations. If the PRPs agree to undertake RD/RA, the schedule will be negotiated to accommodate EPA, FDER, and the PRPs.

If, however, negotiations with the PRPs is unsuccessful, EPA will follow the schedule outlined below:

Schedule Landmark	Date for Implementation
1. Finalization of the ROD	9/1/86
2. Complete Enforcement Negotiations	10/31/86
3. Award Superfund State Contract (and IAG) for Design	12/31/86
4. Initiate Design	2/1/87
5. Complete Design	8/1/87
6. Award/Amend Superfund State Contract (and IAG) for Construction	8/30/87
7. Initiate Construction	10/1/87
8. Complete Construction	10/1/89

SECTION XI
FUTURE ACTIONS

Future actions possible with this remedy are reflective of the site specific conditions. Anecdotal information, borne out by site inspections, indicates the presence of containers which may contain hazardous materials. If this is an accurate assessment, there may be future releases which will require reactivation of the ground water recovery system.

Other future activities will include the O&M actions outlined in the previous section.

APPENDIX A

Testimony Submitted by
Yvonne Woodman and Gail Speicher
before the
House of Representatives
Environment, Energy, and Natural Resources
Subcommittee on Government Operations

TESTIMONY FOR

HOUSE OF REPRESENTATIVES

ENVIRONMENT, ENERGY, AND NATURAL RESOURCES SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS

SUBMITTED ON WEDNESDAY, JUNE 22, 1983
BY:

YVONNE WOODMAN
GAIL SPEICHER

SPOKESPERSONS FOR JACKSONVILLE HEIGHTS
CONCERNED CITIZENS AGAINST WATER
CONTAMINATION

Thank you, Congressman Bennett, for the introduction and for your efforts in our behalf. Without the support of yourself, Senator Lawton Chiles of the Florida Senate, Mr. Don Gray, and Lester Brown, we would not be here today to address this subcommittee.

Mr. Chairman ... Members of the Subcommittee on Environment, Energy, and Natural Resources ... ladies and gentlemen: We are victims of groundwater contamination. Water ... the very resources necessary to sustain life, both yours and mine, is being, and in our case has already been, destroyed! Groundwater contamination is, indeed, a life and death issue.

In the next few minutes, we will summarize the effects groundwater contamination has had on residents of the Hipps Road area in Jacksonville, Florida. Additionally we submit our entire presentation, including physical evidence and documentation, as testimony to this subcommittee.

In the 1960's, the U.S. Navy contracted with independent waste contractors for the disposition of "trash" generated by NAS Jacksonville and NAS Cecil Field. A former landowner, for the purpose of filling in a cypress swamp and hoping to create "useable" land, agreed to a landfill contract with the disposal companies. Residents were concerned with the problems that would accompany the 6.8 acre landfill.

At the beginning of the landfill dumping period, the sanitation regulation and supervision should have been assumed by the County Health Department. On October 1, 1968, the City of Jacksonville and Duval County governments consolidated. At this time, the two became one, meaning the City Health Department should have acquired the responsibilities of both. The landfill was supposedly completed in early 1970. In December, 1970, Don and Yvonne Woodman purchased 4.7 acres of land which included approximately 3 acres of landfill. We were told by the former landfill owner that it was "trash" from NAS Jacksonville and Cecil Field, that the landfill was supervised by the Sanitation Division, and that in 7 years we could even build on it. So in blind faith, we purchased the property, being drawn to the neighborhood by the refreshing rural lifestyle and pleasant neighbors. However, some people purchased property in the area never knowing about the landfill. We discovered that the Hipps Road landfill was never totally completed. It was to have a layer of topsoil and foilage on the surface. When we asked our city councilman to investigate, he reported that the Sanitation Division had released it as satisfactorily completed. The final payment was made and there was nothing we could do.

In the early 1970's, a pond bordering the landfill had a thick foul-odored film on its surface, and fish and surrounding vegetation died. Residents called city officials. After evaluating the situation, the city ordered the cleanup.

Approximately four barrels of a degreasing agent were dumped into the pond.

HEALTH DEPARTMENT INVOLVEMENT

According to the Department of Health, Welfare and Bio-Environmental Services report dated April 11, 1983, the Public Health Division of the City of Jacksonville took the "first" water sample at 8903 Hipps Road on February 15, 1983, in response to a complaint of unusual taste and odor in well water. Test results, not available, until March 18 showed vinyl chloride and other solvents and degreasers present.

<Actually, the Carroll Pittman family noticed a strong odor and taste in their water following heavy rains in September, 1979, and called the City Health Department to complain. A first test (bacteriological analysis) was conducted 10/15/79 and found to be satisfactory. Unable to drink the water due to strong petroleum odor and taste, Pittmans had a water softener installed on July 1, 1980. Still the odor and taste were prevalent. The situation worsened and they called the water softener company. The company stated that it wasn't a water softener problem, but they should call the City Health Department. In January, 1981, the Florida

Department of Health and Rehabilitative Services ran two drinking water chemical analyses, the last of which Pittmans were told would be sent to Atlanta, accompanied by certification of suspected imminent and substantial danger documents. They did not receive results until March 20 and there was no indication of Atlanta involvement. Tests indicated BDL. At this point, the Pittmans were told by Mr. Langford (now retired) of the Health Department that the Health Department had done all the free testing they could do. Any further testing would cost approximately $800 to $1,000 and would have to be done at their own expense. He urged them to drill a new well instead, since further testing would reveal the need for a new one anyway. He also told them not to make waves, tell no one about your water problem, not your neighbors and especially not the media. If they did (they were told), it would cause trouble and their property would devalue. They were never warned not to drink the water. Tired of agonizing over what to do, the Pittmans complied on October 8, 1981, at the cost of $1,200. Eighteen months later, April 20, 1983, they were told the new well was contaminated.>

Following the testing of the Todd residence, a series of well tests and mud samples from ponds were done (see Attachment

During early stages of testing, several residents drilled lls at their own expense after being led to believe that was nly alternative. This presented confusing and conflicting tuations with which the Jacksonville Heights Concerned Citizens d to deal. We were told not to drink the water, but it was OK bathe in it. Also, only ten wells per week could be tested cording to the Health Department. This created confusion and ubt since the situation was declared an emergency by the Mayor. dditionally, we have since discovered, on the same day, that one mber of our Steering Committee was told by the DER that the mud mples taken from neighborhood ponds were completed and showed K, another member was at the Bio-Environmental Division and saw e mud samples sitting untested in a refrigerator. The chemist tated that they were too busy to get to them.

Another contradiction seemed to be the lack of knowledge ffered regarding health hazards. When "The Summary of VHO amples Taken in the Hipps Road Area" was made available to esidents, we found there were approximately thirteen various oxins including benzene, methylene chloride, tetrachloriethene, inylchloride and methyl isobutyl ketone. By talking with xperts and researching data, we realized our problem was much ore than just obtaining potable drinking water, as officials ould have us believe. The quote most readily used was "poses no mmediate harm". By drinking a single glass of water, one won't eel immediate effect, but what about long-term consumption?

What about exposure through inhalation of fumes and skin absorption? What about genetic effects on future generations?

Obviously, no one can tell us how long the chemicals have leached into our water supply. Some of the wells that proved to be contaminated did not have the same detectable odor as others. Mr. Fry was quoted as saying, "just because it comes up clean one time, doesn't mean it won't come up contaminated the next time". This implies that there are too many variables to measure the length of exposure.

NAVY AND CITY INVOLVEMENT

Perhaps the most frustrating of all these issues is the apparent apathy of U.S. Navy representatives towards our situation. First there was a complete denial of involvement of the Navy. Next came an admission from a Navy spokesman of knowledge of dumping at the site, but no records of contents dumped are available. Second, according to minutes of the Department of Health, Welfare and Bio-Environmental Services, on April 8, 1983, a meeting was held to discuss contaminated wells on Hipps Road. It was attended by Bill Roach, NAS Jax and Dave Rogers, NAS Cecil Field. Although the Navy met with the city and state officials to discuss the Hipps Road situation, the Navy apparently chose not to be represented at citizens meetings, even though invited. We hereby submit evidence of waste generated by Navy.

Exhibit A is a five gallon can labeled "methyl ethyl ketone" with label indicating Naval Air Station Zip Code 32212. A 1967 date is legible. This was excavated in the presence of Don Gray and Lester Brown June 4, 1983, from the landfill behind the residence of Donald R. Woodman, 9084 Hipps Road. Depth of find was approximately six inches below the surface.

Exhibit B is official military documents found on the dump site on the same date.

Exhibit C is photographs of pieces of evidence and other materials taken from the dump site by residents before "completion of landfill", aircraft tires and sections of airplane wings protruding through the landfill surface, and other photographs demonstrating the crator-like topography of the landfill, sparse vegetation, and surfacing of waste materials.

The City of Jacksonville has displayed various attitudes regarding our situation. One surprising element was the fact that our own city councilman has never responded in a positive manner to calls nor participated in citizen's meetings to which he was personally invited.

The commitment from the City of Jacksonville to meet our immediate and long-term needs came with an emergency ordinance passed by city councilmen on May 10, 1983, (see Attachment B). We feel this ordinance set a precedent. Other cities throughout the United States should pass similar legislation, as it is becoming more and more evident that it will be needed. It provdes for immediate and long-term safe drinking water needs as well as providing means of recovery for costs and expenses. To date, neither City General Council nor the Mayor's office have released information regarding negotiations on finding a responsible party.

HEALTH ASPECT

We enjoyed relatively good health in this community up until the last five years. Our Steering Committee has gathered data through medical reports and personal interviews which we are submitting to this Subcommittee. Because of so many variables in everyday life, it would be easy to say these are generalized observations. However, we suspect many of these problems to be a direct result of groundwater contamination. Several cases in particular are documented in this report (see Attachment C - medical statements from six families). The nature of the health problems links directly to the effects of toxins leaching into our water supply. For example, unexplained nose bleeds, muscle spasms, disaccharidase deficiency and bladder cancer have been diagnosed by the medical community. All involved live within the plume area (see Attachment D). Along with these specific cases, there have been reports of numerous cariac problems, loss of equilibrium, nausea, headaches, fatigue, black outs, dizziness, ypoglycemia, hypertension, kidney infections, pancreas attacks, depression, learning disabilities among children, and dental problems.

In conclusion, I would like to address a personal situation. My four year old son, Wayne, is the resident with disaccharidase deficiency, a rare enzyme deficiency which prevents any digestion of sugar. I had a normal pregnancy and delivery, with the exception of running a temperature which began four days before delivery and persisted for four weeks. The temperature could never be explained and after three weeks of testing, finally an antibotic did take effect and I could go home. Before I left the hospital, my pediatrian told me Wayne was a screamer. Little did we know he would scream for approximately one full year. Wayne was an extremely irritable baby, never satisfied with toys, food or even [illegible] him. I began to notice after I stopped nursing him that his stools were not formed. After consulting four different doctors and going through numerous experimental diets, we found a doctor to help him. This process took two and a half years. When Dr. Wubbena put him on a diet for disaccharidase deficiency, we still saw no positive results for a period of months. Gradually, without ingesting any sugars or carbohydrates whatsoever, Wayne began to show slow improvement. A period of manageability has just been reached within the past

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three months. Research on the toxic chemicals found in area wells reveals abundant information on all but one -- 4 methyl 2 pentanone, the chemical which measured at the highest concentration of all detected. Recently, we did learn another name for this toxic chemical -- methyl isobutyl ketone, which research shows destroys the enzyme system.

CONCLUSION

We have been devastated by effects of groundwater contamination. The devaluation of property, disruption of lives, and physical and emotional harms become more apparent each day. Time has run out. One doesn't have to hold a doctorate degree to realize that this nation is in the midst of a national crisis. The irresponsible mishaps of yesteryear are the tragedies of today. Approximately 50% of Americans depend on groundwater to survive. The evidence is clear. Groundwater contamination has become a "cancer" of its own - destroying human lives ... physically, emotionally, and economically, not by an act of God, but rather by man.

It's time to quit playing political football with this issue. The seriousness of groundwater contamination must be recognized. An immediate commitment from legislators and action must be initiated to stop it. Those who generate and regulate hazardous waste must be forced to follow through with their responsibilities.

Priorities must be rearranged to meet this crisis. Dollars can and must be made available to provide the agencies with manpower, technology, equipment, and the means to enforce laws regarding haphazard toxic waste dumping. If laws are not presently effective, they must be changed to be so.

As concerned citizens, we have discovered many discrepancies and contradictions and have learned to recognize them readily. It's amazing how smart and persevering a person becomes when his life and economic stability become endangered.

It's a sad legacy we leave to our children, ladies and gentlemen, ~~and now all of our fates are in your hands~~.

ADDITIONAL COMMENTS

According to Florida Department of Environmental Regulation's 1982-83 "Summary of Known Cases of Groundwater Contamination", in Florida there were 65 recorded sites of known groundwater contamination. Seven of these were in Duval County. Now there are eight.

Florida drinking water contamination sites as indicated by data from the EPA National Ground Water Supply Survey in 1981 reveal various volatile organic chemicals such as 2-Dichloroethane, tetrachloroethylene, and vinyl chloride were detected in twenty (20) community water supplies that served almost 700,000 Floridians!

In Duval County (Jacksonville) alone the city health department estimates there are nearly fifty (50) old landfills; 26-28 can be identified by location, and only four (4) within the city's quadrant are monitored. Records on landfills in Duval County have only been kept by the city in the past ten (10) years. The truth is...there's no way of knowing.

Florida's soil is extremely porous. Add this to the increasing amounts of hazardous waste generated by industry and military bases...and we are sitting on top of a time bomb!

The prevailing attitude amoung those who confront the public seems to be one of indifference as though it's just the price people pay for today's progress & lifestyle. As a victim, I tell you...the price is too high! Interest and fear are two forces that unite man. Across the nation Americans are uniting...tired of political two-steps...tired of the lack of funding necessary to gain control of pollution even though thousands of studies, books, and documents reinforce our fears...and, in essence, we are sickened by the continuous disregard for the safety of human lives. Yet we still believe in this great nation. We thank you for the opportunity to speak...and pray that our testimony has fallen upon "deaf ears".

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APPENDIX B

Responsiveness Summary

JUL [illegible] 1986

U.S. EPA REGION IV
HIPPS ROAD LANDFILL SITE
RESPONSIVENESS SUMMARY

DOCUMENT NO.: 126-CR1-RS-CYVW-1

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EXECUTIVE SUMMARY

HIPPS ROAD RESPONSIVENESS SUMMARY

I. INTRODUCTION

The Public Comment Period on the Hipps Road Remedial Investigation/ Feasibility Study (May 7-28, 1986) began with a public meeting held on May 7 at the Webb Wesconnett Branch of the Jacksonville Public Library. Approximately ninety residents attended the meeting, which lasted from 7 p.m. to 10 p.m. During the Public Comment Period following the meeting, the U.S. Environmental Protection Agency (EPA) received approximately seventy written comments from residents, Potentially Responsible Parties (PRPs), environmental groups, and others. In general, these comments reflected the same types of concerns that were expressed at the public meeting.

These comments and EPA's responses to them comprise the first part of the Responsiveness Summary. The second part is the official transcript of the public meeting.

This Executive Summary lists all the written concerns and describes, in more detail, the written comments and EPA responses for the four major areas of concern. These four areas of concerns are as follows:

- EPA's preferred (not yet selected) alternative does not sufficiently address certain considerations;
- The health assessment is inadequate and flawed;
- EPA's preferred alternative is excessive and attempts to achieve standards that are too stringent; and
- The connection between the landfill contents and the contamination of local wells has not been sufficiently established.

The remaining areas of concern that received fewer comment letters included:

- Unknown contaminants;
- Quality of public involvement process and reports;
- Spread of contamination unknown;
- Relocation of residents;
- Local water runoff;
- Ground-water flow;

- Use of innovative technology;
- Use of cost criteria;
- Safety of new wells;
- Responsiveness to risks of landfill;
- Capping local wells;
- Inaccuracies in the RI and FS;
- Department of the Navy's recognition of need for remedial action;
- RCRA applicability;
- Air stripping;
- Jacksonville waste water treatment capability; and
- Effectiveness of ground-water extraction procedures.

In preparing the Responsiveness Summary, EPA paraphrased each separate concern in each letter and prepared a response addressing that point. The individual or organization writing the comment is cited in each response. Some concerns were raised by more than one writer; in that case EPA wrote one response and cited each source of the comment.

II. MAJOR CONCERNS AND EPA RESPONSES

A. INADEQUACY OF RECOMMENDED PLAN

Comments in this category specifically criticized the recommended plan for:

- the use of a clay cap, since the technology is not sufficiently reliable;
- failure to address onsite containment or removal of contaminants;
- failure to clean up the aquifer; and
- failure to address soil contamination.

In general, EPA emphasized that no solution has been selected, and whatever remedy is selected will fully clean up the site according to the dictates of the National Contingency Plan. Specific EPA responses were: if a cap is used it will be used along with other measures; it is not feasible to excavate the soil to remove the contaminants; the solution will control contamination threats to the ground water; and that soil contamination is addressed in the B group of alternatives.

B. EXCESSIVENESS OF RECOMMENDATIONS

Many comments from the Department of the Navy and Waste Control of Florida stressed that the recommended plan was too extensive. In particular, ground-water extraction and restoration of the ground water to drinking water standards is unnecessary.

EPA's response is that the ground water in this area is a potential drinking water supply and extraction may be necessary for its protection as such. In addition, other remedial measures such as capping the landfill may be necessary to close the landfill properly and to guard against future exposure hazards from known and unknown contaminants.

C. INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATED WELLS

Waste Control of Florida provided several comments saying that the RI procedures were flawed and did not produce data sufficient to establish that the landfill is the only, or even the primary, source of contamination.

EPA's response is that the procedures used were completely sound, and that while EPA had never stated that the landfill was the only source of contamination, the RI had indeed found that it was a significant source. In addition, while investigating other potential sources of contamination does fall within the purview of the Superfund program, it is not within the scope of the Hipps Road RI/FS.

D. HEALTH RISKS

Residents were also concerned that the health assessment minimized the true exposure risk and did not consider very sensitive populations, other potential pathways of exposure (mainly household uses of water), synergistic effects, the effects of episodic high exposure levels, and the possibility of developing sensitivities that could be aggravated by future exposure to various substances.

EPA's response was that the conditions that presently exist in the Hipps Road community indicate that the current health assessment is sound. City water has been provided to all residents with private wells living near the landfill. That action has reduced the threat of contamination for local residents. Second, the planned remedial actions will lower the level of contamination to safe levels. Third, the human body has its own complex methods of ridding itself of the major contaminants of concern. Furthermore, there is not enough information or scientific knowledge to evaluate many synergistic effects and hypersensitivities.

The next section contains the written comments and EPA responses. The source of each comment is noted at the top of the page. A key to the sources is included as Appendix 1.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 1 & 3

Comment:

If the solution proposed by EPA [at the public meeting] is not revised, the public health and environment will remain at risk.

Response:

During the Public Meeting held for discussion of the Hipps Road Landfill Feasibility Study, a concerned citizen questioned EPA about the remedy being proposed for this NPL site. In response, the audience was told that EPA was considering a full landfill closure (capping) and implementation of institutional controls, i.e., fencing, drilling bans, possible relocation of residents affected by implementation of the selected remedy, etc. However, it was made clear that this position is very flexible, pending comments received from the public during the Public Comment Period. It has become apparent that mechanisms to control ground-water threats to the environment must be part of any acceptable remedy. The public health threats posed by consumption of contaminated drinking water were eliminated when the local residents were connected to city water supplies in actions conducted by both the City of Jacksonville and the U.S. EPA. If the landfill is covered by a protective cap, the threat posed by contact with landfill contents will also be mitigated by placing a barrier between the landfill and the public.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 2

Comment:

EPA has recommended [at the public meeting] the use of a clay cap to contain the site. Clay caps will not suffice as a permanent solution and historically require large levels of funding for repairs and maintenance.

Response:

EPA has not finalized any recommendations for remediating the Hipps Road Landfill site; recommendations will be presented to the EPA Regional Administrator who will ultimately decide on the desirability of the proposed remedy. The Feasibility Study has projected present worth costs for all remedial alternatives which were found to be feasible for this site. Capping the landfill was estimated to cost approximately $1.5 million to implement and maintain for 30 years, along with ground-water monitoring. This is one of the most cost effective measures available for this site. However, EPA does not feel that a cap alone will provide adequate protection for human health and the environment, therefore the cost of the final remedy will probably be much higher.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 2

Comment:

Given the geological (crater-like) condition of the site, a clay cap will also settle, crack, and leak.

Response:

Part of any landfill capping procedure is site stabilization, which in this case would require that the lower areas be filled and compacted up to grade to provide a smooth surface. This would prevent settling. Any cap will require continued maintenance to prevent dessication cracks and erosion. If EPA were to select this option as part of the remedial response for the Hipps Road Landfill site, provisions for maintaining the cap would be arranged prior to final selection.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 5

Comment:

I strongly oppose EPA's proposal to cap and monitor the Hipps Road landfill. We cannot keep covering up and taking the easy way out, because it will cost more later in wildlife, money, property, and the well-being of human life.

Response:

Landfilling waste materials is, at best, a marginal technology. However, the wastes generated in this country are primarily disposed at landfills. Technological advances have been made which improve the quality of landfilling operations, but further improvements are still necessary. Until the volume of waste generated is reduced significantly, landfilling will probably continue to remain the primary feasible solution for disposal of municipal wastes. If EPA determines that the Hipps Road Landfill will be treated as any other similar landfill, the solution will be to close the site properly by placing a cap on the landfill in accordance with state and federal standards and to provide a design which reflects the highest technical integrity possible.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 2

Comment:

Using a cap for the slow down of percolation in no way qualifies as containment. In addition, lateral and vertical flow of the ground water is not restricted in any way, thus allowing continued contamination of the ground water.

Response:

The purpose of a cap is three fold:

1. It does reduce the downward migration of water from the surface through the fill material;
2. It significantly reduces the possibility of anyone on the site contacting contaminants that might be exposed on the surface; and
3. It is required for a proper closure of the landfill.

In view of these factors, a cap does qualify as containment. Lateral flow will continue, but there are mechanisms evaluated in the Feasibility Study which are capable of dealing with this. If EPA chooses to cap the landfill, these additional actions would necessarily be included.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 10

Comment:

Several EPA alternatives (Alternatives C-2 and C-3 from the FS) would result in the use of a surface cap without any further containment or removal efforts. This would have little, if any, effect on controlling migration from the site. Ground water could easily move laterally below the cap and pick up contaminants, spreading them away from the site. CDM [EPA's contractors for this project] expressed this same concern (FS, p. 2-20). This step alone provides inadequate protection and would be ineffective.

None of the first five preferred [remedial] options address contaminants in soil. Ground-water extraction (Alternative A-4) would only remove water soluble chemicals and would not remove chemicals present in the soil. As a result, chemicals would continue to leach into the ground water at a very slow rate for years.

Response:

All remedial alternatives that were found to be feasible were presented in Table 5-1 of the draft Feasibility Study. This table is a list of alternatives which can be used to remediate the Hipps Road Landfill, and the final remedy selected for this site may encompass any combination of the alternatives presented in Table 5-1. The alternatives which have the initial letter "A" address remediation of the ground-water contamination. Those alternatives with the initial letter "B" deal with remediation options for the landfill. Finally, the alternatives with a "C" designation address "other" considerations. EPA has never indicated that consideration is being given to implementing any "C" option by itself, and no such remedy will be recommended.

The "first five preferred [remedial] options" include four options which treat ground-water contamination and the fifth option (B-1) eliminates leachate production. The compounds which enter the ground water are water soluble, by definition, and would effectively be recovered in a ground-water recovery scenario. Contamination in the soils is fully addressed by the group "B" remedial alternatives.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 10

Comment:

All three Group C Alternatives are inappropriate as cleanup alternatives because none addresses the problems of contamination at the site. Alternative C-1 - no action - is clearly unacceptable. C-2 - landfill closure and monitoring - calls for capping the site, meeting the Florida Department of Environmental [Regulation] closure regulations, and not using the contaminated ground water as a drinking water source (see FS, pp. 3-35 to 3-37). While these steps may be helpful, the site has already failed, leaking contaminants into the community. A closure plan will not address these problems and is inappropriate for this situation. Alternative C-3 calls for using "institutional" controls such as installing fences, plugging wells, banning future well drilling and relocating residents in affected homes (FS, pp. 3-37 to 3-39). This alternative assumes material in the landfill will not migrate (a completely false assumption - it already has), and that there will be closure of the site. Again, nothing is stated about cleanup either on- or offsite. None of these alternatives should be considered and each should be dropped from the report.

Response:

Alternative C-1, the no-action alternative, must be considered as a remedial option under the mandates of the National Contingency Plan (40 CFR 300.68(F)(V)). However, during the Feasibility Study process, no action was deemed to be an unacceptable alternative site and this alternative was eliminated from further consideration.

Alternatives C-2 and C-3 are feasible alternatives. However, they are not sufficient by themselves, and EPA has never indicated any intention of implementing either alternative alone. The site characteristics, e.g., residences physically onsite, are such that alternative C-3 cannot be eliminated from this study. Alternative C-2, combined with other remedial actions, is a feasible alternative which complies with the mandates of the National Contingency Plan, under which Superfund operates. Therefore, Alternative C-2 will also remain part of the Feasibility Study.

Finally, EPA and its contractors never stated that these alternatives would prevent migration of contaminants into the environment. The major pathway of exposure to the community was through drinking the ground water. That pathway was eliminated when EPA and the City of Jacksonville elected to connect all residences in the area to municipal water supplies. The remaining exposure pathway is via potential physical contact with the landfill. Should landfill closure be selected as part of the remedial action, exposure to the landfill would be eliminated.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 1 & 3

Comment:

The recommended plan [at the public meeting] does not address onsite containment or removal of contaminants.

Response:

Options addressing both on-site containment of the landfill and removal of contaminants were evaluated in the Hipps Road Landfill Feasibility Study. Both options require excavation of the landfill -- an action which could pose significant health threats to both the residents in the landfill area and to on-site workers. In addition, both options were found to be prohibitively expensive in the cost-effectiveness analysis. The National Contingency Plan, under which "Superfund" is implemented, requires that applicable technologies be screened in terms of technical feasibility, level of protection provided to the public and environment, and relative cost effectiveness. The two options cited above can potentially present a risk to the public and are not cost effective, and were therefore eliminated from further consideration. The remedy which EPA selects will satisfy all criteria mandated by the National Contingency Plan.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 2

Comment:

A remedial action at this site must be a permanent solution which will not require additional expenditures, and which includes a complete aquifer cleanup. A plan for remediating this site must address onsite containment and restrict the lateral flow of ground water or remove contaminants.

Response:

Under the National Contingency Plan, remedial actions are "... those responses to releases that are consistent with a permanent remedy to prevent or minimize the release of hazardous substances or pollutants or contaminants so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment ..." (40 CFR 300.68[a]). At no point is it stated in the law that a remedial action must not require additional expenditures, or that specific remedies must be implemented. Any remedy selected for the Hipps Road Landfill will be executed in accordance with the National Contingency Plan and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and in accordance with the known site specific conditions.

DEFICIENCIES IN RECOMMENDED ALTERNATIVE

Source of Comment 1 & 3

Comment:

The recommended plan [at the public meeting] does not address cleanup of the aquifer and is not a permanent solution. This will lead to the contamination of additional water resources and require expenditure of additional funds for maintenance.

Response:

The remedy discussed at the public meeting did not address protection of ground-water resources, however, EPA has not yet selected a remedy. It has become apparent that any remedy selected for this site cannot ignore the contaminants present in the ground water or those which may later threaten the ground water, and EPA will implement a remedy which addresses this issue. Any remedy which would destroy the landfill contents was not found to comply with all mandates of the National Contingency Plan. Therefore the selected remedy will inherently have provisions for maintaining the integrity of the remedial action.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

The total health assessment within the Feasibility Study was used to minimize the true exposure risk.

Response:

This comment is unjustified and unwarranted. The major source of concern at the Hipps Road Landfill site was eliminated by the extension of city water supplies to the Hipps Road area residents. Health assessments produced by CDC/ASTDR and by EPA contractors address the relevant public health issues present at this site. These works were produced with the utmost integrity from legal, scientific, and technological perspectives. The findings may not please public reviewers, but the veracity cannot be questioned.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

EPA must assess past exposure [of the Hipps Road area residents to the contaminants] in order to prepare an assessment of potential future health risks.

No assessment was performed to address the effects of the contaminants found at Hipps Road on unborn children, newborn children, or the elderly.

Response:

The main exposure pathway and the main health threat posed by the Hipps Road Landfill was eliminated when EPA and the City of Jacksonville provided the Hipps Road area residents with city water supplies. When the exposure to the contaminants in the ground water ceases (predominantly Volatile Organic Compounds-VOCs) the body rapidly rids itself of these contaminants. The concentrations of the other contaminants found at the site are at levels below public concern. Thus, there is no medical, epidemiological, or scientific justification to now conduct a health assessment to evaluate past or future health issues, especially on very narrow populations such as unborn children, infants or the elderly.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

Citizens may continue to be exposed to contaminants that may have pervaded household items such as water heaters or water softeners. No assessment of this potential has been made.

Response:

No assessment of this exposure route is warranted. Once the source of contamination (ground water) is removed, the exposure ceases. Volatile organic compounds will rapidly volatilize off or degrade. The length of time since the exposure has ceased has been too long for VOC's to still pose any significant threat.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

During the public meeting, citizens were told that the body naturally cleanses itself of the chemicals found during the Hipps Road landfill Remedial Investigation. Research disputes this.

No consideration was given to household uses, such as showering or washing dishes, of water containing the compounds found at Hipps Road. Nor is there any plan to address these circumstances.

Response:

The first comment is inaccurate. The citizens were informed that when exposure(s) -- especially to volatile organic compounds -- ceases, the body rapidly excretes the substance(s) or their metabolites, usually through the urine. While this is not always true with exposures to inorganics, the key public health issue is the concentration and duration of the exposure. There is no present or past analytical data to indicate that any concentrations were sufficiently high at any time to warrant concern that exposures may have occurred which would result in physical burdens from the compounds or their metabolites.

The literature and the research that has been conducted in laboratories and in occupational and non-occupational settings, are clear on this issue. The results are accepted in toxicologic, epidemiologic, medical, and public health fields.

In addition, the concentrations of contaminants identified over time were too low to warrant concern about dermal exposure and absorption.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

It appears that throughout the Public Health Evaluation that the full range of toxic chemicals was not properly considered, especially those that are retained by the body and pose a serious health risk, particularly with long term exposure. There was also no presentation of the [synergistic] effects of various contaminants, although it is reasonable to assume that the presence of any toxic chemicals in any combination increases the total health risk.

Response:

A health risk is determined and assessed by three factors; all of which must be present and "operating" in a dynamic fashion, over time. These factors are:

A. Documented presence of a chemical(s)

B. Receptor population(s)

C. Environmental exposure pathway(s) by which contaminants are transported by pathway(s) at sufficiently high concentrations (at or significantly above primary drinking water criteria) over sufficient periods of time to allow body burdens and hence, health risks or effects to develop.

Critical to the issue here for this site is C. Concentrations of VOC's and metals were not high enough (per historical and RI Data) to allow "serious health risk" to develop. The potential for such to occur is always there -- but also once the pathway for exposure was identified, it was eliminated by the extension of the city water lines.

Very little is known about synergistic effects, especially since at least 60 separate compounds were identified at this site. Science is unable to assess synergistic effects of multiple substances and varying concentrations. Research has shown synergism can result in additive and negative effects in research settings. It's virtually impossible to extrapolate this to human exposures -- especially those that are retrospective.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

Indicator compounds used in the Feasibility Study are assessed at levels corresponding to the mean concentrations found during the Remedial Investigation. However, this precludes the consideration of the effects caused by episodic high exposure levels.

Response:

Using the mean concentrations of the indicator compounds identified during the investigation of the Hipps Road Landfill is the only rational and reasonable method of assessing potential adverse health effects. None of the historic or current ground-water or private well data indicated any contaminants to be present, over time, at levels above the primary drinking water standards or at levels of public health concern. Concern regarding "episodic high exposure levels" cannot be assessed because the facts do not provide information to evaluate what is now only an anecdotal issue.

INADEQUACIES OF HEALTH ASSESSMENT

Source of Comment 2

Comment:

No assessment was made to determine if the compounds found at Hipps Road could cause people to develop sensitivities which could be aggravated by future exposure to trace levels of organic compounds or metals.

Response:

CDC/ASTDR has determined that an assessment of this nature cannot be conducted. Such hypersensitivities have been found to develop from other causative factors or agents, such as high occupational exposures. They have not been found to develop from the consumption or use of water contaminated with the relatively low concentrations of volatile organic compounds and metals that were found at the Hipps Road Landfill.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The Navy submits that the remedial actions undertaken should not include extraction and treatment of the contaminated plume at this time. The Feasibility Study at page 2-3 makes the statement that cleanup goals "require removal of priority pollutants from the ground water if their concentration exceeds the limits of the drinking water standards or detected at concentrations higher than background (or detection limit)".

We find no basis for this conclusion in the underlying reports. Indeed, the statement is inconsistent with both the "cleanup goals" at pages 1-27 to 1-28, and the findings of the risk assessment at Appendix A. The law does not require treatment of ground water unless the risk of public harm makes such treatment reasonable and necessary.

Response:

The issue of ground-water contamination will have to be addressed in the selection of a remedial action. The National Contingency Plan states that the remedy selected is one "... which attains or exceeds applicable or relevant and appropriate Federal Public Health and environmental requirements that have been identified for the site." [40 CFR § 300.68(i)(1)] Although there are some exceptions outlined in § 300.68(i)(5), none are applicable to the Hipps Road Landfill. The surficial aquifer, within the site area, is a potential drinking water source and as such, drinking water criteria are applicable.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 9

Comment:

The Remedial Investigation concludes that ground-water contamination will discharge in nearby surface waters at levels that would be in compliance with applicable state and federal regulatory standards. Public drinking water has been provided to residents in the Hipps Road area. Accordingly, extraction of ground water before natural discharge provides little benefit and could involve significant cost. Therefore, any ground-water extraction system must be carefully analyzed.

Response:

Although there are currently no residents in the Hipps Road area who are using ground water as a drinking water source, the ground water is still considered to be a potential drinking water source. As such, the ground-water resources must be considered in terms of the highest potential use. EPA does not propose remedial actions without analyzing all significant aspects of a Superfund site.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The Remedial Investigation and Feasibility Study state that the contamination of the ground water at Hipps Road creates a hazard should that water be used as a source of drinking water. The standards of Table 1-8 are those for drinking water. If the aquifer is not used as a drinking water source, then there is no need to achieve or maintain drinking water standards of purity in the ground water.

The levels for potable water for lifetime consumption are broadly used in the Feasibility Study as a standard for purity, and for establishing levels of public risk. The use of these levels is, in some circumstances, inappropriate.

Response:

The surficial aquifer system in the vicinity of the Hipps Road Landfill is a potential source of drinking water. As such, EPA believes that the highest level of use (as a potential drinking water supply) must be protected. Protecting this potential drinking water supply must be addressed in the selection of a remedial response for the Hipps Road Landfill site.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The Remedial Investigation concludes that ground-water contamination will discharge in nearby surface waters at levels that would be in compliance with applicable state and federal regulatory standards. The municipal water supply has been extended to the residents in the Hipps Road area. Accordingly, extraction of ground water before natural discharge provides little benefit and could involve significant cost. Therefore, any ground-water extraction system must be carefully analyzed.

Response:

Ground-water extraction has been carefully analyzed and discussed in the Hipps Road Landfill Feasibility Study. The benefit provided by ground-water recovery operations would be protection of a potential water resource.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 9

Comment:

Many of the remedial alternatives proposed in the draft Feasibility Study are not appropriate because: (1) the wells where chemicals have been detected are not used for human consumption; (2) public water is available to all well owners; and (3) the contamination found in ground water is predicted to be in compliance with applicable standards when it discharges into nearby surface streams.

Response:

Although this comment does not identify the specific remedial alternatives which are not appropriate, it presumes that site conditions have no potential for change. In addition, an aquifer cannot be neglected simply because it is not currently being utilized. Future use is a significant consideration in the selection of a remedial response to a hazardous waste site. For this reason, EPA feels that all preferred alternatives listed in the Hipps Road Landfill Feasibility Study are applicable and feasible.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The implementation of a closure plan, providing for additional earth cover, continued monitoring for an expected period of up to 30 years, institutional controls to inhibit excavation, drilling, and the use of wells in the contaminated zone, as well as relocation, if needed, of homes affected by the remediation, satisfactorily meets all of the needs of the public health, welfare, and the environment at Hipps Road.

This option leaves open a more elaborate response, should data developed through monitoring reveal flaws in the original study or significant additional releases of chemicals, or risks to the community at Jacksonville Heights. The option also makes data available to the larger Jacksonville community which may relate to other sources of contamination, yet to be identified. The record on which this decision must be made clearly supports this resolution.

Response:

The remedial action alternative described was discussed at the public meeting held on May 7, 1986. At that time EPA was considering this alternative as a final remedy for the Hipps Road Landfill site, however subsequent evaluation has shown that this remedy probably does not go far enough to protect the ground-water resources. The data generated for this site supports the implementation of several remedial alternatives. EPA will select a remedy for the Hipps Road Landfill site based on technical feasibility; level of protection provided to the public health, welfare and the environment; and cost effectiveness.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The cost associated with extraction and treatment are a significant increment over other, more conservative, remedial actions. Table 5-2, which summarizes the alternatives and costs for treatment at Hipps Road, indicates costs ranging from $6.5 to $12 million for the variety of technologies available to treat ground water. All of these options assume no removal of the basic materials in the site and a continuing leaching of material from the site into the aquifer (FS page 3-16).

A more accurate picture of the comparative costs is presented by the Present Worth Analysis at Table 4-1, at page 4-5 of the Feasibility Study. The costs are compared by funds which, if invested now, would produce the funds required to make future payments. It is unclear how operating and maintenance (O&M) costs fit into this projection. Table 4-1 seems to limit the projected O&M for ground-water treatment to one year, when the continuing leaching would require activity beyond the one year period. But even assuming this understatement of comparative cost, the addition of ground-water treatment to closure, institutional controls, and monitoring, adds an average cost of $2 million to the present worth cost of the remedial action. We submit that the gain in public health and welfare achieved by the increased expenditure is minimal, given our present knowledge of the site conditions.

Response:

The ground-water scenario portrayed above is an accurate description of that which was used for cost estimating purposes. The cost estimate figures have only a relative degree of accuracy since the specific factors affecting implementation cannot be identified until a remedy has been fully designed. This type of cost estimation is carried out to allow evaluation of several remedial alternatives, all of which are feasible.

In addition, several more detailed evaluations are being conducted in order to address scenarios in which there are further releases of contaminants to the ground water. These additional evaluations will address contingency needs to re-activate ground-water recovery systems, if necessary after an initial recovery action.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 9

Comment:

While a connection between the Hipps Road Landfill and contamination in adjacent wells has not been established, it is appropriate to consider remedial measures that will ensure that public exposure to the landfill is minimized or eliminated.

Our review suggests that the following remedial measures are appropriate:

1

1. Conduct additional investigation and monitoring to identify all sources of contamination in the area and verify predictions regarding contaminant levels in the ground water;
2. Seal all private wells which indicate contamination; connect the property owners of sealed wells into the municipal water system;
3. Repair the existing cover of the landfill and maintain it as is necessary to provide a physical barrier to accidental exposure to contact with the landfill contents;
4. Install a series of institutional controls, including fencing, cautionary signs and deed restrictions, which would prevent future use of the landfill site;
5. Consider relocating persons residing on or within the landfill boundaries.

Implementing these recommendations will protect human health and the environment by removing direct exposure to contaminants via the surface of the landfill, and by eliminating access to contaminated ground water. [These] proposed measures will ensure that any future releases of contaminants from the landfill can be handled in the most effective way.

Response:

Taken as a whole, the combination of alternatives outlined above, is not sufficient. The existing cover for the landfill consists of a permeable sand layer which is thin, discontinuous, and affords no protection from dermal exposure. In addition, there is no protection of ground-water resources in the area. Additional investigation of potential sources of ground-water contamination in the area are not within the scope of this remedial response; site discovery is a separate action under CERCLA.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 9

Comment:

The Feasibility Study identified 11 different remedial action alternatives or combinations of those alternatives. Based on the ranking of these alternatives, as well as discussions held during a public meeting on May [7], 1986 in Jacksonville, Florida, it appears that EPA's preferred alternatives are: (1) ground-water extraction and treatment and/or discharge for a period of one year; and (2) construction of a closure cover over the site. In addition, EPA has proposed ground-water monitoring of the site. In our opinion, neither ground-water extraction nor the construction of a low permeability cover is justified.

Response:

EPA has not, as of yet, proposed a remedy for the Hipps Road Landfill site. The proposal will be made when a Record of Decision (ROD) is submitted to the Regional Administrator. The remedy selection is approved when the Regional Administrator signs the ROD.

The ground water in the area of the site is a potential drinking water supply. Simply because it is not currently in use is not justification for allowing further degradation of a resource.

Finally, the Hipps Road Landfill was never closed properly under Chapter 17-7 of the Florida Administrative Code, as only a thin layer of sand was used to cover portions of the landfill. If EPA selects ground-water recovery and/or placement of a low permeability cap over the landfill, there is ample justification for this decision.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

There is no significant risk of surface water contamination associated with a failure to undertake extraction and treatment of the ground water at this time. As reported at page A-36 of the Feasibility Study and in more detail at page 6-20 of the Remedial Investigation, ground-water modeling predicts that contaminated ground water is not expected to discharge into the unnamed tributary of the Ortega River near the site for at least seven years with maximum concentrations entering the tributary within 25 years. The maximum concentrations released into the surface waters are estimated to be less than 0.7 ug/l, by a conservative estimation process that does not consider such factors as biodegradation, adsorption, or volatilization which would tend to reduce the levels of concentration even more.

The Remedial Investigation goes further to quantify this risk to surface waters in this language:

> "The model results also indicate that even if actual total contaminant mass in the ground water is 50 percent higher than estimated, the maximum concentrations of contaminants entering the tributary will still be below 1 ug/l, presently the most stringent water criteria."

It is important to note, of course, that surface water in this area is not used as a source of potable water, and any ingestion could be expected to be occasional and not systematic.

Surface waters are not otherwise a significant health hazard according to the Feasibility Study. Lead, arsenic, and mercury detected in pond sediments are at levels comparable to background concentrations in the B horizon of soils in the eastern United States, and as such do not represent a significant excess risk to humans or aquatic organisms. FS at A-36.

Response:

Current health threats posed by surface water contamination are minimal, as are environmental threats. However, any landfill has unknown components which could pose a future threat to health or the environment, and such a scenario must also be considered when evaluating the threat posed by a site such as the Hipps Road Landfill.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The Feasibility Study raises risk concerns in several categories other than ground-water hazards. These can be summarized as minimal risks of ingestion of, or dermal contact with, contaminated soils or surface waters. This includes a concern that heavy rains or other accumulations of water would create "ponding" of surface waters containing hazardous levels of contaminants.

It is the Navy's position that these problems are significant if no closure or monitoring is conducted--an option that we do not support. Closure that includes the deposit of a layer of clean soil over the site will minimize ponding and the accumulation of surface waters. Restricted access to the site should make incidental any dermal exposure or ingestion of soil by children. We note again that determining a risk for dermal contact on contamination levels for drinking water is not credible. The risks are totally different in nature and extent.

The suggestion that levels of contamination in surface soils are low is supported by the fact that no vegetation is apparent at the site. The Feasibility Study itself concludes that there is little potential for uptake of contaminants by vegetation offsite. See A-25, FS.

The Feasibility Study also expresses some concern that the contaminants will migrate downward into the limestone aquifer, thereby endangering that "more highly used" ground-water reserve. See 4-18, FS.

This theme is not developed in the Feasibility Study; the Remedial Investigation studies of the hydrology and geology of the site do not support a finding of a significant risk based on that theory. The limestone aquifer to which the report refers is not the deep Florida[n] aquifer upon which so much of Florida's water supply depends. That Florida[n] aquifer is found at 500-600 feet, is artesian, and is protected from water above it by pressure and a heavy layer of clay.

The smaller limestone aquifer identified at Hipps Road is located at a depth of more than 70 feet and is isolated from the shallow aquifer by a layer of clay of discontinuous sandy and plastic properties. This semi-confining clay layer, at monitoring well 21, indicated a hydraulic conductivity of 5.7×10^{-5} ft/day (2.0×10^{-8} cm/sec); these figures indicate that it will take approximately 100,000 days for waters to move 5.7 feet. Pages 4-32 and 4-30 of the Remedial Investigation indicate the limestone aquifer pinches out toward the northeast, the direction of the gradient in this area. As waters move through the clay at this very slow rate, they discharge into the limestone aquifer, through which a volume of more rapidly moving waters are passing. Thus the waters moving into the limestone aquifer through the semi-confining clay layer are subject to significant dilution, as well as attenuation of contaminants due to the adsorption of elements by the clay.

The contaminant levels identified in the limestone aquifer do not suggest a greater overall risk in this aquifer, once local wells are controlled and no longer used for drinking. The added cover material contemplated by the closure plan will also reduce the vertical ground-water movement through the landfill. Page 4-26, FS.

Response:

EPA concurs with the position that the problems noted above are significant if no action is taken at the Hipps Road Landfill site. However, the hydrogeologic data used to justify the lack of risk to the limestone unit is misleading. Hydraulic conductivity is the rate at which a fluid will pass through a medium, but other factors must be considered when evaluating a dynamic, semi-confined condition. Leakage is the rate of vertical movement through a semi-confining unit. This parameter takes into consideration the driving force of the head differential between the source bed (upper portion of the surficial aquifer) and the leaky aquifer (limestone unit). This rate is significantly more rapid. In addition, the contaminants of concern at this site (volatile organic compounds) are typically more mobile through clay material than water is. For these reasons, EPA cannot ignore threats posed by the Hipps Road Landfill to any portion of the surficial aquifer system.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 8

Comment:

The draft Feasibility Study recommends the installation of 20 extraction wells with the withdrawal rate of 20 gallons per minute per well for a period of one year. The total flow from this extraction system would be approximately 600,000 gallons per day, or 210 million gallons per year. This proposal is unrealistic and of limited remedial value.

As previously noted, the landfill is located in a localized recharge zone. Assuming arguendo that contamination in the area emanates exclusively from the Hipps Road site, the removal of 210 million gallons of ground water would not isolate the landfill from continued exposure to ground-water flow. While withdrawal at a high rate for a period of one year could withdraw the existing ground water underlying the site, it would not treat future flows. Therefore, any contaminants which had adsorbed onto the solid phase or were still containerized at the landfill would be unaffected by such an extraction proposal.

The proposal is technically problematic in that some 600,000 gallons of ground water must be treated and discharged per day. At the present time, the nearest receiving stream, the Ortega River, is the subject of a wasteload allocation study by the Florida Department of Environmental Regulation, and it is unlikely that new discharges will be allowed to the river, given its existing poor water quality. The proposed volume would also exceed the low flow rate of the river, indicating that dilution would not be available and that violations of class 3 water quality criteria could result.

An alternative would be to discharge the extracted ground water to a POTW operated by the City of Jacksonville. However, the nearest POTW is over two miles away and is not connected to the Hipps Road site by sewer. This means that over two miles of sewer would have to be constructed before the ground water could be discharged to the treatment works, and the proposed extraction volume would represent about 12% of the POTW's existing capacity and at least 6% of its projected upgrade capacity.

Since ground water contains only low levels of contaminants and withdrawal and treatment of ground water may not remove all of these contaminants, the efficacy of ground-water withdrawal and cleanup must be questioned. Moreover, the replacement of the private drinking water wells with city water eliminates aquifer contamination as an exposure pathway. Therefore, it is more appropriate to seal the existing private drinking water wells to ensure that the potential for future exposure is minimized.

Response:

An extensive study was conducted to develop a feasible ground-water recovery scenario (Appendix C-2, FS); the scenario as outlined is realistic.

EXCESSES OF RECOMMENDED ALTERNATIVE

The remedial value of protecting a potential water resource is obvious. EPA is aware that recovery of currently contaminated ground water would not address threats posed by potential future releases. If ground-water recovery were implemented at the Hipps Road Landfill site, the design would include monitoring to detect future releases. If releases do occur, the recovery system, which would remain in place, would be reactivated.

Discharge to the Ortega River system was not presented as a preferred remedial option. However, if it were to be recommended, EPA would ensure that violations of Class 3 Water Quality Criteria would not occur. EPA contractors have already met with City of Jacksonville Public Works Officials. The expanded capacity of the nearest POTW will be completed prior to implementation of any remedial action. It has been ascertained that discharge to the POTW is feasible. Finally, removal of contaminated ground water has been determined to be feasible. This is fully discussed in the Hipps Road Landfill Feasibility Study.

EXCESSES OF RECOMMENDED ALTERNATIVE

Source of Comment 9

Comment:

The draft Feasibility Study identified two alternatives to control surface exposure at the landfill site. One alternative involves installation of a low permeability cover over the landfill. The other alternative is to repair the existing cover. Based upon the hydrogeology underlying the Hipps Road Landfill, a low permeability cover is not justified. While the predominant water flow direction through the soils underlying the site is vertical, a low permeability cover over the landfill will not hydraulically isolate the unit from the ground water flows. The site lies between areas of higher elevation and is, therefore, as has been previously noted, a localized recharge zone. In addition, some of the landfill contents are apparently located within a water table zone. Therefore, the installation of a low permeability cover will have little impact on the ground water exposure to the contents of the landfill. These factors suggest that surface activity is warranted to repair the existing cover to prevent exposure of the landfill contents.

Response:

At no time was "repair of the existing cover" proposed as a remedial alternative. The existing cover is a highly porous, loosely packed, discontinuous layer of sand which provides no protection. The predominant direction of ground water flow in the site area is horizontal. Tables 6-1 and 6-2 of the Remedial Investigation Report indicate that the horizontal conductivity is higher in all units of the surficial aquifer system than the vertical conductivity. The purpose of a low permeability cap is two-fold: 1) to provide a high integrity barrier between the landfill contents and nearby residents and the surface environment, and 2) to prevent additional contaminants from reaching the surface environment through infiltration from rainfall events. While a cap will reduce infiltration through unsaturated soil, it will not decrease lateral migration of ground water through the saturated fill material. A low permeability cap was never proposed as a method for reducing lateral flow. It will, however, reduce the vertical flow rates by reducing the ground-water mounding attributable to the landfill.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

Neither the hydrogeologic findings nor the analytical data establish that the landfill is the only source of contamination. Since the Remedial Investigation presumed that the Hipps Road Landfill was the sole source of contamination, it failed to investigate the possibility that other sources may have contributed to or caused the contamination found in off-site wells.

Response:

The Remedial Investigation did not presume that the landfill was the only source of contamination. This contention is based upon several previous studies conducted by state and local agencies. However, it is clearly stated in the Remedial Investigation that the Hipps Road Landfill is not the only source of contaminants. The Remedial Investigation process is conducted on a site specific basis, and can only be conducted in a site specific manner. Discovery of additional sites is a separate process under Superfund.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The principal problem presented by the Remedial Investigation is that the work performed has not demonstrated a clear relationship between the Hipps Road site and the chemicals found in adjacent wells.

Response:

In designing the strategy for investigating the Hipps Road Landfill field investigation, EPA and its contractor included permanent background wells, two temporary background wells, and 5 existing (USGS) background wells. A total of 64 wells were sampled. Some of the background wells revealed the presence of low levels of contaminants. This was stated in the Remedial Investigation Report (Executive Summary, page two), along with the probability that there is an additional source of contamination as yet unidentified. However, the predominant contamination was found to be downgradient from the landfill site. The suite of compounds identified downgradient was larger than the suite present in background wells, and had a more variable composition. EPA does not question the fact that the Hipps Road Landfill has significantly impacted ground-water resources within the area.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

Given the poor correlation between landfill contaminants and contaminants measured in the wells, the [Remedial Investigation] should include an investigation of other potential sources of contamination. However, no such investigation was conducted. There may be many sources of contamination of the adjacent wells and the landfill may be only a minor contributor.

Response:

The scope of the Hipps Road Landfill Remedial Investigation was to investigate the Hipps Road Landfill, not to identify diverse sources in the region. That latter task is executed within the Superfund program, but not in site specific investigations. The Hipps Road Landfill Remedial Investigation indicated that although the site is not the sole source of contamination, it is indeed a significant source.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The hydrogeologic data combined with the location from which the significantly contaminated samples at wells EMW-2 and EMW-3 were obtained does not demonstrate that the [Hipps Road] landfill is the sole source of contamination.

Response:

The hydrogeologic data indicate that the wells from clusters EMW-2 and EMW-3 which are screened in the 50-60 foot zone are positioned to receive contaminated ground-water flow from the Hipps Road Landfill. Although this does not prove that the landfill is the sole source of contamination, it does demonstrate that the landfill is indeed a source.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

[The potential for other sources of contamination] is supported by the electromagnetic surveys conducted by the NUS Corporation as part of the [Remedial Investigation] Report. The electromagnetic surveys indicated two hot spots, one southwest of the Hipps Road Landfill site immediately across Hipps Road, and the other in the immediate area of wells EMW-2 and EMW-3.

Response:

NUS Corporation did not perform a geophysical survey at the Hipps Road Landfill site. The survey that the State of Florida conducted, however, showed increased conductivity readings southwest of the Hipps Road Landfill site. No analytical data from cluster wells in that vicinity account for these readings. However, clay zones which were identified in the geological investigation of the site are likely to account for the higher conductivity readings, which the State believed may be a contaminant plume.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

Ground-water and soil samples were taken from bore holes drilled through the landfill and from wells adjacent to the site. A comparison of the compounds identified in these samples indicates a low degree of correlation between samples from the landfill and samples from the wells. Many of the compounds found in the landfill were not also found in the downgradient soil and water samples. Conversely, many of the compounds identified in the off-site locations were not also found in the landfill samples.

For example, EMW-2 and EMW-3 are the off-site wells with the most significant contamination. In well EMW-2, two compounds were identified in the upper part of the sand unit, but neither compound was identified as one of the 16 organic compounds located in the landfill. Similarly, of 23 compounds identified in the lower part of the sand unit at EMW-2, only 7 were identified in the landfill; and of 6 compounds identified in the limestone unit, only 2 were identified in the landfill.

Response:

Several scenarios can explain variations between contaminants found in onsite and offsite monitor wells. First, several compounds found downgradient from the landfill may be degradation products of compounds onsite, e.g., vinyl chloride is a known degradation product of dichlorobenzene. Second, some compounds found downgradient may have entered the ground-water regime as a result of containerized releases, which would be very localized in the landfill. It is possible that onsite sampling could have missed such a release point. Third, anecdotal information indicates that in the early days of the landfill operation, uncontainerized fluids were poured directly into disposal cells. After such a long time (about 18 years), these uncontainerized materials could have leached from the landfill entirely (or to concentrations below detection limits). Finally, as stated in the Remedial Investigation Report (p. 10-1), some of the compounds found offsite may be derived from other sources. There are certainly other scenarios which could be devised. However, whatever the actual case may be, EPA has shown that the landfill is a major source of ground-water contamination in the Hipps Road area.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The analytical data from the ground-water samples shows that there is an area of significant contamination northeast of the site. This area includes wells EMW-2 and EMW-3. The analytical data obtained from samples at EMW-2 and EMW-3 indicate the contamination to be present within and throughout the aquifer (sample depths 10 feet, 55 feet, and 80 feet) with higher compound concentrations in the lower of the sand unit (55 to 65 feet) and in the limestone unit.

Response:

The analytical data from ground-water samples show that there is an area of significant contamination northeast of the site. This area includes well clusters EMW-2, EMW-3, and EMW-6, at the 50-60 foot depths. There are virtually no contaminants in the 10 and 80 foot wells in the same well clusters.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The [Remedial Investigation] report implies lateral flow from the landfill to the northeast as the only lateral flow direction [Figure 6-11, RI report). However, the RI report is biased because most of the ground-water monitoring wells were installed between the landfill and the contaminated wells north and east of the landfill.

Response:

The Remedial Investigation report shows that lateral ground-water flow from the Hipps Road Landfill site may move toward the northeast or east. (Figures 6-7 and 6-11, RI Report).

The report is not biased because although there are several (9) wells northeast of the site, there are more wells (24) to the east, south, and north of the site.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

At EMW-3 only one compound was identified in the upper sand unit which was also identified in the landfill; of 30 compounds identified in [the] lower sand unit, only 11 were identified in the landfill; and of 3 compounds identified in the limestone unit, only one was also identified in the landfill. These low correlations do not demonstrate that the landfill is not the source of organic contamination at these wells. However, the existence of so many compounds at the wells which were not also found in the landfill indicates the existence of other sources of contamination.

Response:

EPA agrees that the Hipps Road Landfill is not the sole contributor of ground-water contamination in the local area (RI report, p. 10-1), but there is no doubt that the landfill is a major source of contamination.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The [Remedial Investigation] ignored possible explanations for problematic samples. For example, the construction of the bore holes indicates that the cadmium detected may have been caused by the construction techniques employed, rather than actual contamination. The high lead concentrations measured in the private wells may be caused by problems associated with the construction of those wells. The RI, however, did not attempt to identify the true source of these contaminants, preferring to attribute them exclusively to the Hipps Road Landfill.

Response:

The Remedial Investigation Report contained an explanation for the cadmium found in the temporary wells (p. 4-40). The temporary wells were the only ones installed using the driven casing method which used a metal alloy hammer containing cadmium. All other wells were drilled using the mud rotary method. The presence of lead in PW-9 was only one facet of the overall data base that indicated that wells were contaminated by ground water from the landfill. Lead was found in ground-water samples from the landfill at levels (3,400 and 5,300 ug/l), which could account for the level of lead in the private well.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

Only one sampling event occurred and the samples taken were not filtered, contrary to commonly accepted sampling procedures. This raises the question as to the extent of which metal ions, particularly arsenic, are actually present in solution at such high concentrations.

Response:

Several ground-water sampling locations used in the EPA investigation have also been used before. Most significant were wells EMW-2, EMW-3, and EMW-6. These three wells were contaminated in 1983 and are still contaminated with basically the same suite of chemicals. Therefore, this cannot be construed as an isolated sampling event. In addition, all samples which were analyzed by an EPA Contract Laboratory Program facility were subjected to a detailed verification process in which collection and analytical phases of the sampling process are scrutinized in detail.

There is still an ongoing debate on whether or not samples should be filtered. As recently as May 20, 1986, the National Water Well Association held a debate in Columbus, Ohio to discuss the pros and cons of filtering ground-water samples. As of yet, the issue is still debatable. However, EPA Region IV Standard Operating Procedures and Quality Assurance Manual mandates that the ground-water samples collected in hazardous waste site investigations remain unfiltered.

INSUFFICIENT DATA TO SHOW CONNECTION BETWEEN LANDFILL AND CONTAMINATION

Source of Comment 9

Comment:

The [Remedial Investigation] raises significant questions about the source of metals in the ground-water samples. While zinc, cyanide, mercury, cadmium, lead and arsenic were identified in samples taken from bore holes drilled in the landfill, there is no data on major ion chemistry or pH associated with these samples. Without this data, especially the pH, the mobility of these metals cannot be assessed.

Response:

The metal compounds (FeO, FeS, etc.) are not commonly determined for samples sent to the CLP, and although pH was determined for the borehole ground-water samples, it is of little value in determining the mobility, unless the specific compounds are known.

A more useful evaluation is to determine the concentrations of the metals in ground-water samples both upgradient and downgradient of the site. If the downgradient samples contain higher amounts of the metals than the upgradient samples, the metals are probably added by the landfill. If the downgradient samples contain lower values, the metals may not be coming from the site.

At the Hipps Road site, the average concentration of the metals mentioned in the comment that are upgradient of the landfill is 10.2 ug/l. Downgradient, the average concentration is 13.4 ug/l. This strongly indicates that the landfill is a contributor of metals to the local ground-water system.

UNKNOWN CONTAMINANTS

Source of Comment 7

Comment:

EPA's consultant indicated that most of the rusting and therefore release of toxics to ground water has reached a peak. I argue with this because I still can locate cans (with N.S.N. #), medicine vials, hypodermic needles and such that appear in excellent condition. Based on this it is anyone's guess when some unknown container may rupture in the landfill and release contaminants.

Response:

The scenario is a valid concern which EPA has realized and must be addressed in the selection of any remedial action. The remedy selected by EPA will address this issue.

UNKNOWN CONTAMINANTS

Source of Comment 10

Comment:

The contents of the landfill were not clearly established in the Remedial Investigation report (FS, p. 3-17). This makes it difficult to properly evaluate the effectiveness of a cleanup alternative because you do not know all the chemicals you are trying to clean up. While it is not practical to expect to know 100% of the landfill contents, enough must be known to feel that you have got the "worst actors".

Response:

The borehole study was designed to sample all sections of the landfill aerially and vertically. Although much of the site contains metal that prohibited drilling, all areas of the site were sampled, and there is no reason not to believe that the "worst actors" have been identified.

However, the possibility that either something could have been missed or that some containers might eventually deteriorate and release additional chemicals has prompted the installation of a monitor well system around the site. In addition to monitoring for possible releases from the landfill (downgradient) the monitor wells upgradient of the site also will be sampled to test for background data.

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

Source of Comment 2

Comment:

EPA has chosen to ignore the real concerns of the public.

Response:

Within the jurisdiction of the EPA, under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP), EPA has addressed the public health and environmental concerns surrounding the Hipps Road Landfill site. Early in this project, through many forms of communication with the Hipps Road area residents, EPA determined that the residents' concerns appeared to focus on a desire for more complete information about actions taken at the site, enforcement actions against potentially responsible parties, health issues, ground-water contamination, and depreciation of property values.

EPA has responded to these concerns as follows:

1. Desire for more complete information about actions taken at the site. From the beginning of this project, the JCACW president and spokesperson were contacted by the Regional Superfund Community Relations Coordinator and assured that the appropriate regional technical, legal, and public affairs personnel would be in contact with them throughout the project. An invitation was extended to call or come to the regional office at any time for information on this project. Routine calls, meetings, fact sheets, and news releases have been initiated by EPA during the course of this project. This information flow included the citizens of Hipps Road as well as local and state officials and the news media. An informal public meeting was held to explain the project work plan, and a formal public meeting with a public comment period was held to discuss the alternatives for remediation. The EPA project officer has been in frequent contact with the JCACW president and spokesperson.

2. Need for enforcement action. The EPA attorney for this site is pursuing the potentially responsible parties and has been available to answer questions by the citizens both by telephone and at the public meetings.

3. Health issues. As part of EPA's extensive Remedial Investigation and Feasibility Study, the EPA contractors have developed a comprehensive Public Health Assessment. The Centers for Disease Control ASTDR office has been involved since the inception of this project. ASTDR has reviewed all data generated from the Hipps Road Landfill and have made their findings available. In addition, EPA and the City of Jacksonville have connected all residents who were using ground-water supplies with the municipal water supply system in order to remove the major exposure pathway.

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

4. Groundwater Contamination. The findings of the site investigation indicated contamination of nearby ground-water resources. The data has been made available to the citizens through the information repository and by directly providing reports to the concerned citizens group, Jacksonville Citizens Against Contaminated Water.

5. Depreciation of property values. The depreciation of property values due to the Hipps Road Landfill is a concern that EPA recognizes. However, EPA has not been empowered to make restitution for depreciation to individual landowners. Private parties whose property has depreciated in value may pursue a cause of action for damages against parties liable for the depreciation.

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

Source of Comment 2 & 3. 9

Comment:

The public was allocated a very short time for review of the Feasibility Study and to submit comments.

Response:

The National Contingency Plan, under which "Superfund" is implemented, mandates that "... feasibility studies that outline alternative remedial measures must be provided to the public for review and comment for a period of not less than 21 calendar days. Such review and comment shall precede selection of the remedial response. Public meeting(s) shall, in most cases, be held during the comment period." (40 CFR Part 300.67(b)). The materials on which the selection of a remedial measure will be based were placed into the information repository and provided to a local citizen's group (Jacksonville Citizens Against Contaminated Water) for review 17 days prior to the public meeting. Twenty-one days were allotted after the public meeting for submission of comments. Under the NCP, EPA could have extended the public comment period if such a request had been made. The public comment period was conducted in accordance with the manner mandated in the National Contingency Plan.

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

Source of Comment 2

Comment:

The goals of a Remedial Investigation and Feasibility Study are to: 1) identify the source of contamination; 2) determine the extent of contamination; and 3) determine the potential for contamination. Jacksonville Concerned Citizens Against Contaminated Water feels that EPA has not met these goals.

Response:

EPA has met these goals. The landfill has been identified as a major source of contamination (p. 10-1 RI Report). Neither surface water nor sediments in the area were shown to be contaminated by the site (p. 10-2 RI Report), however, the extent of ground-water contamination has been determined (p. 10-3 RI Report). The potential for contamination of ground water and surface water has also been determined, as well as a prediction of the area of contamination and the level of contamination (Sections 6 and 10 RI Report).

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

Source of Comment 3

Comment:

At the Public Meeting, the representative from CDC [ASTDR] was non-committal and unprepared. The manner in which he talked down to the public was unexcusable.

Response:

The ASTDR's multi-disciplinary review of the current and historical data from the Hipps Road Landfill site and the extensive work with EPA since 1983 led to the extension of public water supplies to the Hipps Road area residents.

The inference that ASTDR's manner was condescending to the meeting attendees is unjustified. ASTDR is mandated, by Congress, to serve as EPA's public health advisor and consultant. The role of CDC/ASTDR is to be an objective, yet medically and scientifically sound public health agency. The conclusions drawn by ASTDR's evaluation of the Hipps Road Landfill are sound, if not popular.

QUALITY OF PUBLIC INVOLVEMENT PROCESS AND REPORTS

Source of Comment 7

Comment:

I have found numerous contradictions and inconsistencies which cloud the entire [Remedial Investigation/Feasibility Study] study. My comments come from only a small review time on my part and I feel that many more questions could be addressed. As an engineer I understand the position that EPA must try and fulfill, it is an extremely difficult and complex one to say the least.

Response:

Several of the inconsistencies mentioned previously have been answered. It is likely that many of the inconsistencies appear to be such because of the limited review time. However, it is gratifying that the commentator appreciates the EPA position as a difficult and complex one.

SPREAD OF CONTAMINATION UNKNOWN

Source of Comment 10

Comment:

The Feasibility Study is intended to define appropriate alternatives for cleaning up a waste site. This cannot be done if you do not know how far the contamination has spread. From the data collected in the Remedial Investigation, chemicals have reached as far as wells sampled by the U.S. Geological Survey (USGS), identified as EMW-2, EMW-3 and EMW-6 (FS, p. 2-4) and estimated to be approximately 1000 feet northeast of the site (FS, p. A-2). This is the extent of what is known about off-site migration. CDM [EPA's contractor for this project] actually assumes that this is the furthest contaminants have travelled (FS, p. A-2). Yet there is no reason to think this is the case without additional testing.

Response:

Taking the range of site conditions into consideration (lithology, contaminants, and hydraulic conditions) the greatest distance, predicted by modeling, that the ground water could move in the time that has elapsed since deposition of the land fill material is 1000 feet northeast of the site. The presence of contaminants in wells within that 1000' distance and the absence of contaminants in wells installed outside that distance provides a high level of confidence in these data. In addition, the temporary wells drilled during the site investigation were drilled in a manner as to "close in on" the contamination by progressively approaching the landfill, rather than by drilling directly into areas of high contamination.

SPREAD OF CONTAMINATION UNKNOWN

Source of Comment 10

Comment:

Deeper wells are needed to better evaluate how deep the contamination has spread. Since CDM [EPA's contractors for this project] states that water in the deep limestone and shallower water table "appear to be connected" (FS, p. 1-13), chemicals migrating from the site will eventually reach this aquifer. Contamination of this aquifer poses significant health risks since it connects to the drinking water supply for the City of Jacksonville.

None of the first 5 preferred [remedial] options address this concern. If any are selected as the remedial action of choice, then nothing will be done about contamination in either the upper ground-water table or the deeper limestone aquifer.

Response:

The limestone unit of the surficial aquifer referred to pinches out downgradient (northeast) of the site. There are several monitor wells that intercept this aquifer between the landfill and where it pinches out. The aquifer is adequately monitored. The city water supply wells obtain water from the Floridan aquifer, which is several hundred feet below the site and thus is protected by the Hawthorn Formation.

RELOCATION OF RESIDENTS

Source of Comment 2 & 7

Comment:

Based on EPA's own "Biggest Bang for the Bucks" comments [at the public meeting], I do not feel that you have gotten your bang for perhaps one half of the monies that have been expended to date. Affected residents could be removed from possible danger, a temporary cap placed, and all the while a more permanent solution to the contamination problem be thoroughly researched.

During the meeting it was brought up that to date EPA has expended in excess of $980,000.00 for studies. This figure excludes salaries for personnel. Based on the Remedial Investigation and Feasibility Study, capping and institutional controls appears to be adequate measures to remedy the landfill. Therefore, before further exorbitant amounts of monies are spent for design, etc., I would recommend the immediate removal of residents in and around the landfill and a temporary cap be placed until a future more equitable solution can be reached. If you cannot eliminate the source, keep everyone away from the problem.

Response:

To date, EPA has expended funds to accomplish three primary goals. The first was to provide safe drinking water to the public. The second was to identify those parties potentially responsible for the conditions found surrounding the Hipps Road Landfill. The third was to develop a data base on which a remedial measure can be identified and selected. The costs for these actions are determined by free competition of qualified contractors under the Federal Procurement System, and are presumably reflective of fair market prices. The removal of citizens and installation of a temporary cap would be considered emergency response actions if implemented prior to the execution of a Remedial Investigation and Feasibility Study. Under the mandates of the National Contingency Plan, an emergency removal action is restricted to approximately $1,000,000.00 in funding and 6 months in implementation. (40 CFR 300.65[63]). Such action as suggested above would likely exceed this limitation.

RELOCATION OF RESIDENTS

Source of Comment 3 & 4

Comment:

The Feasibility Study did not specify which residents would be relocated in order to implement a remedy at this site. I recommend that these people be contacted.

Response:

The Hipps Road area residents whose property will be affected by the selected remedial action cannot be fully identified until the remedial design is completed. At that time, the extent of property affected by the remedial action will be precisely identified. Owners of those homes directly on the landfill will be affected by the implementation of any remedy, except the "no-action" alternative which EPA has already rejected. When design specifications are known, discussions with the affected property owners will be conducted in order to reach a fair solution.

RELOCATION OF RESIDENTS

Source of Comment 10

Comment:

The cleanup goals are misleading, poorly stated and do not address cleanup of the site. Instead, they address the removal of risk. While this is important, the point of Superfund is to clean up hazardous waste sites while at the same time removing risks. These goals do not do both. As they read now, these goals could be achieved without doing anything to clean up the site. This would result in leaving all contaminants where they are, causing deterioration of the environment and damage to the ground water and deeper aquifer.

These goals could be achieved simply by relocating nearby residents and implementing institutional controls similar to Alternative C-3. This is not what the community wants or expects from a Superfund cleanup effort. Protection and cleanup of the environment and aquifers is important and should be included in the statement of cleanup goals.

Response:

The purpose of "Superfund" is to mitigate the threats posed to human health, welfare, and the environment. There is a mandate to reduce the risk presented by a hazardous waste site to acceptable levels, not to "remove" the risk. Low levels of contaminants were found at the Hipps Road Landfill site, and the major pathway of exposure has been eliminated by providing municipal water supplies to the Hipps Road area residents.

While community concern is an issue to be addressed, it is not the only consideration involved in remediating a hazardous waste site. EPA has the ultimate responsibility to select a remedial action which is feasible, cost effective, and is responsive to the public health, welfare and the environment.

The selection of alternative C-3 alone will not mitigate any threats to the environment, and in fact, will leave the landfill exposed.

LOCAL WATER RUNOFF

Source of Comment 6

Comment:

We are about across the road from the Hipps Road landfill on Exline Road. We have a city drain ditch in front of our property which takes care of run off water from Hipps Road and the landfill area. We are concerned of how many contaminants we may be getting from the soil during long periods of rain when the water lies in the ditch.

Response:

Based on sampling data from the remedial investigation in the vicinity of the drainage ditch there is no evidence of any contaminants present in the ditch that can be considered related to the landfill.

LOCAL WATER RUNOFF

Source of Comment 7

Comment:

A contradiction arises from consultant and EPA comments concerning their opinion that contaminants only leave the area by way of shallow surface waters. They justified their opinion by stating that rain water percolated rapidly, producing little or no runoff. Earlier during the consultant's comments it was brought out that a monitoring well southwest of the site could not be installed due to severe flooding. I argue that the area does not percolate well, and from long term personal observations I have observed flooded areas on my own property that appeared to have a visible sheen. These same low areas discharge to the drainage ditch on Exline Road, thereby carrying contaminants with them.

Response:

The commentator is correct in stating that there are areas in the vicinity of the landfill that do not drain well. However, the landfill was excavated in phases to allow deposition of fill material, then covered with sand excavated previously. Such reworked sand is typically much less tightly packed, and tends to be considerably more permeable than undisturbed soil. This results in faster percolation of surface water into the subsurface at the site than in most of the surrounding area.

GROUND-WATER FLOW

Source of Comment 9

Comment:

Under natural gradients, seepage from the landfill would enter the limestone upgradient of these wells and flow through the limestone at the well locations [EMW-2 and EMW-3] toward the river valley. This natural flow system does not provide a flow pathway for contaminated ground water to migrate into the sand unit at these wells from either the limestone unit or from the landfill. The natural gradients do provide a flow pathway vertically downward from the surface near or at the wells to the open intervals of the wells. These conditions are exaggerated by potential pumping from the limestone unit (as exhibited by the 1985 ground-water level data in all monitoring levels). Such pumping would increase the downward vertical gradient in the vicinity of the wells and further prohibit upward flow from the limestone unit.

Response:

The site investigation revealed both horizontal and vertical components of ground water flow. The hydrogeologic and modeling data presented in the Remedial Investigation Report show that instead of flowing into the limestone unit in the area of wells EMW-2, EMW-3, and EMW-6, contaminants from the Hipps Road Landfill would most likely be in the lower water table zone (above the semi-confining unit).

When the limestone unit pinches out, as shown in the Remedial Investigation Report (p. 4-30), the water must continue migrating. The Hawthorn Formation, which is the regional confining unit, underlies the limestone unit. The confining characteristics of the Hawthorn Formation will force at least some of the ground water into the water table zone. This is supported by the upward vertical gradient which is shown by the water level measurement data. Therefore, pumping in the limestone unit would not prohibit upward flow from the limestone unit.

GROUND-WATER FLOW

Source of Comment 9

Comment:

The [Remedial Investigation] report implies much more lateral flow in the sand unit part of the aquifer system than is supported by the infiltration rates, potentiometric data and hydraulic conductivity -- hydrogeologic model -- in the [Remedial Investigation] report.

Response:

The lateral flow was calculated from aquifer tests conducted at the site in each zone of the surficial aquifer system, as well as from transport modeling. Implications in the Remedial Investigation Report are uniformly supported by data.

GROUND-WATER FLOW

Source of Comment 9

Comment:

The lateral component of flow in the entire system is radially outward (to the north, east, and south) from the site area toward the Ortega River system.

Response:

The lateral component of ground-water flow in each of the zones of the surficial aquifer is predominately toward the northeast and east from the site. The Field Investigation indicated no lateral flow to the south.

GROUND-WATER FLOW

Source of Comment 9

Comment:

From the area of the site, ground-water flow is primarily vertically downward to the limestone unit, then lateral toward the discharge area.

Response:

The data collected for the Hipps Road Landfill site investigation indicated both vertical and horizontal components to the ground-water flow at the site (pp. 6-8 and 6-9, RI Report). The data show, and the Remedial Investigation Report clearly states that the contaminants are most likely to move in the lower water table zone, which is above the semi-confining layer and well above the limestone unit (p. 6-20, RI Report).

USE OF INNOVATIVE TECHNOLOGY

Source of Comment 2 & 10

Comment:

Technologies capable of containing or limiting the migration of contaminants should be considered as part of the Feasibility Study. Innovative methods such as those described by OTA in Superfund Strategy should be considered and evaluated as appropriate.

Response:

Several technologies capable of containing or limiting the migration of contaminants at the Hipps Road Landfill site were considered in the Feasibility Study. These alternatives included a large suite of technologies for recovering and treating contaminated ground water. Site stabilization technologies include full encapsulation of the landfill contents, full excavation and removal of the landfill contents, solidification and stabilization of the landfill contents, decontamination of the landfill contents, and biodegradation of contaminants. Although several of these options are considered innovative technologies, they were fully evaluated through several screening phases.

USE OF INNOVATIVE TECHNOLOGY

Source of Comment 10

Comment:

CDM considered a small number of technologies capable of addressing the contamination at the site. Several which would be effective were eliminated in the initial screening stage, based on cost alone (reverse osmosis, wet air oxidation, ozonation, resin adsorption). While cost is a factor to consider, several of these methods could be very effective while posing less risks than the more preferred alternatives such as air stripping.

Furthermore, more innovative technologies are now available which were not considered at all. Methods such as biological treatment as developed by Groundwater Decontamination Systems or Detox Industries could be very effective at reducing contaminants in the soil and ground water. A vacuum extraction procedure developed by Terra Vac, Inc. of Puerto Rico could remove many contaminants present in the soil. Combining these technologies could provide very effective, permanent cleanup without transferring risks (by removal to another site or by air stripping) and without leaving much (if any) residual contamination. These and other Innovative Technologies are described in more detail in a report prepared by the Congressional Office of Technology Assessment (OTA) entitled Superfund Strategy (OTA-ITE-253, April 1985).

Response:

The initial screening of alternatives in a Feasibility Study is conducted from three aspects: technical feasibility, public health and environmental protection, and cost effectiveness. The last criterion is as important as all others, providing that the remaining viable alternatives address the first two criteria, as the Hipps Road Landfill Feasibility Study clearly demonstrates.

The innovative technologies mentioned above are diverse. Biodegradation was considered in the Feasibility Study; however, ground-water treatment was found to be more technologically feasible. The vacuum extraction technology mentioned above produces concentrated wastes which must either be further treated or disposed of at a landfill approved to accept hazardous waste, thereby incurring additional costs.

USE OF COST CRITERIA

Source of Comment 2

Comment:

Some technologies which would effectively clean up the site were eliminated primarily on the basis of cost. Eliminating a technology solely on the basis of cost should not be part of the evaluation process, especially since EPA has identified two Potentially Responsible Parties with sufficient resources to implement a permanent cleanup.

Response:

The Hipps Road site is considered to be a "fund-lead" site. As such, the Remedial Investigation and Feasibility Study (RI/FS) was performed by EPA's contractor and paid for by EPA with Superfund monies rather than funds contributed by potentially responsible parties (PRPs). Where EPA performs the RI/FS with Superfund money, it is required under the provisions of the National Contingency Plan (NCP) to select the most technologically feasible, cost-effective remedial alternative which will mitigate and minimize damage to, and provides adequate protection of, public health, welfare, and the environment. (See NCP, 40 CFR § 300.68(i) and (k))

The fact that EPA has identified PRPs does not eliminate the need for EPA's compliance with the requirements of the NCP. At the present time, no PRP has formally entered into a consent order or agreed to perform and/or fund any remedial action at the site. Though EPA may later engage in negotiations with PRPs for the PRPs' performance of a more expensive remedial action which produces equal or better results than EPA's most cost-effective technology, EPA still must comply with the NCP for purposes of a fund-lead RI/FS. (See NCP, 40 CFR § 300.68(c))

SAFETY OF NEW WELLS

Source of Comment 8

Comment:

It is clear from the study data that the most significant problem appearing at the site is the contamination of ground water under the site, and in a plume area extending approximately 1000 feet to the northeast of the site. The single most significant remedial action available was completed in January of 1985, when city water systems were made available to all families in the Hipps Road area and the use of local wells which may have fed from a contaminated aquifer was eliminated.

It is both cost effective, and in the best interests of the public health and welfare, that steps be taken to ensure that the wells drawing from the aquifer in question are not used and that no new wells are established without assurance that the water drawn is free from contamination.

Response:

The writer demonstrates a clear understanding of the situation at Hipps Road. It is, indeed, in the best interest of the public to ensure that possibly contaminated ground water is restricted for consumption until free from such contamination.

RESPONSIVENESS TO RISKS OF LANDFILL

Source of Comment 8

Comment:

The cleanup objectives on pages 1-27 and 1-28 more correctly state the heart of the decision made by the EPA.

> [to] Establish institutional controls to prevent the use of existing wells or installation of new wells in the ground-water zone impacted by priority pollutants which exceed the concentration limits presented in Table 1-8, *and/or* provide extraction and treatment of the contaminated plume to levels below those established on Table 1-8.
>
> [and] Removal or containment of landfill material *that pose [sic] a risk* to nearby residents by exposure of contaminated soils by dermal contact, ingestion (by children) or consumption by humans or analysis of vegetables or grasses grown in the contaminated soils. (Emphasis added).

The remedial actions taken must be responsive to the risk presented by the specifics of the site.

Response:

The cleanup objectives cited above are not presented as a final decision, but as proposed goals. Any selected remedial action will reduce or mitigate the risks present at the Hipps Road Landfill. These risks, however, are the actual risks posed by the current site conditions, and the potential risks that may arise from existing conditions (i.e., an heterogeneous landfill).

CAPPING LOCAL WELLS

Source of Comment 6

Comment:

The [Duval County] Health Department tells us all wells on Exline Road are OK, with the exception of a lot of iron. Why will all wells in this area have to be capped? Instead, why not keep all wells safe by moving the landfill?

Response:

The remedial alternative has not been selected for the site at this time. In the event that capping wells became an option, only those wells affected or potentially affected by contamination from the landfill would be capped. It is unlikely that many wells on Exline, which is mostly considered upgradient of the site, would be affected.

INACCURACIES IN RI AND FS

Source of Comment 7

Comment:

Several items disturb me, in both the Remedial Investigation/Feasibility Study and the Feasibility Study summary. If such thoroughness was observed in such studies why does the fourth paragraph of the summary say that three homes exist just outside the landfill, when in fact my home and one other are located directly on the landfill.

Response:

Both the RI and FS Reports state that "... the landfill was covered with a layer of soil and sold as residential lots. The lots were purchased by D. Woodman, H.A. Vorpe, A. Nolan, and W.H. Gorc. There are two homes located between the landfill and Hipps Road ...".

DEPARTMENT OF THE NAVY'S RECOGNITION OF NEED FOR REMEDIAL ACTION

Source of Comment 8

Comment:

The Department of the Navy recognizes and supports the need to take action at Hipps Road which will effectively mitigate and minimize damage to, and provide adequate protection of the public health, welfare, and environment. 40 CFR 300.68(c).

Response:

No comment necessary.

RCRA APPLICABILITY

Source of Comment 8

Comment:

The Feasibility Study, at page 4-17, attempts to summarize the institutional requirements which could apply to the proposed closure. While we understand that this summary is not legally binding, we note that we believe this summary is in error, insofar as it suggests that the Hazardous Waste Regulations, (RCRA Subtitle C, 40 CFR 264) and the EPA RCRA Design Guidelines would apply. This site was not active after 1970 and received no waste after November 19, 1980. Those facts limit the applicability of the statutes and regulations to the disposition of this matter by EPA.

Response:

The fact that the site may not have received waste after November 19, 1980, does not preclude the Agency's consideration and application of RCRA 40 CFR Part 264 requirements to a determination of the relevant and appropriate standards for CERCLA remedial actions. As stated in the November 20, 1985 Federal Register, "the date on which the waste was disposed or managed is not germane to the determination of what response action will adequately protect public health and welfare and the environment. The jurisdictional date would not be grounds for determining that a requirement is not relevant and appropriate to a particular site." (See 50 Federal Register 47917, Section III, "Revisions to Subpart F," November 20, 1985.)

AIR STRIPPING

Source of Comment 2 & 10

Comment:

The air stripping procedure poses an unnecessary threat and possibly dangerous risks to nearby residents. The top preferred alternative includes using air stripping to remove chemicals from extracted ground water. This process will put chemicals into the air where they will be dispersed into the community. This procedure unnecessarily transfers the risks from the ground water that nobody drinks to the air that everybody breathes. If this process is used, residents will be exposed to contaminants that they would not have been exposed to simply because the process is cheaper than other alternatives. Carbon adsorption can achieve the same result, perhaps even removing more chemicals without exposing anyone. Air stripping should not be used under any circumstances.

To emphasize the importance of this, let me share an experience from Love Canal. During the cleanup there, residents established a "hot line" for reporting illnesses and problems in the community. Invariably, the hot line rang off the hook on those days when chemicals were disturbed onsite. Residents had no way of knowing what was happening onsite, but children got sick, people with respiratory problems complained and others developed symptoms of chemical exposure. Apparently, the residents at Love Canal had become sensitized, especially the children, to concentrations of chemicals that scientific evidence would predict to be "harmless". Clearly this was not the case, but nobody could explain it. Since many of the same chemicals present at Love Canal are also present in the Hipps Road landfill, it makes sense not to repeat the errors of Love Canal and avoid contamination of the community.

Response:

The CDC/ASTDR health assessment has assessed and commented on the health threat that may be posed by any remedial actions which would bring contaminants into contact with humans. Air stripping is not a desirable remedial action at this site, and EPA agrees with this decision.

JACKSONVILLE WASTE WATER TREATMENT CAPABILITY

Source of Comment 7

Comment:

In the Remedial Investigation/Feasibility Study one method of disposal of the ground water is disposal in the Privately Owned Treatment Works (POTW). This would be the City's southwest Waste Water Treatment Plant (WWTP) This same plant is currently hydraulicly overloaded and is only recently beginning expansion. It appears that little or no thought was put into this concept.

Response:

In November 1985, EPA's contractor met with officials from the Jacksonville Department of Public Works (Water and Sewer) to discuss the possibilities for discharging contaminated ground water from the Hipps Road Landfill Site into the City of Jacksonville POTW. At that time, the EPA contractor was informed that the Southwest WWTP is being expanded to provide the necessary capacity. The increased capacity will be available before the implementation of a remedial action. Therefore, the option to dispose of contaminated ground water at the POTW is feasible, and that option will remain as part of the Feasibility Study.

EFFECTIVENESS OF GROUND-WATER EXTRACTION PROCEDURES

Source of Comment 10

Comment:

CDM [EPA's contractors for this project] proposed a single ground-water extraction procedure using 20 extraction wells pumping 20 gallons per minute (FS, p. 3-2) to be used with all Group A alternatives. This procedure (developed as a computer model) estimates that 95% of the contaminated ground water would be recovered after one year of continuous pumping (FS, p. 3-2). Several important factors were not considered in this estimation: the influence that surface capping will have on water table levels, the lack of containment system to keep contaminated wastes within a limited area, the limited ability to remove soil contaminants, and the selective removal of only water-soluble contaminants. It is highly unlikely that 95% of the contaminants will be removed because of these factors. As a result, additional testing and further estimates are needed to address these factors.

Response:

The primary role of a ground-water model is to help obtain quantitative answers of sufficient accuracy and detail to guide in the decision making process for whatever decision needs to be made. In this case, a ground-water model was used as a tool to help evaluate the best extraction well system for cleaning up ground-water contamination at the Hipps Road Site. The model results indicate that 20 extraction wells, each pumping 20 gpm, is the best system. The model results also indicate that under the worst possible contamination scenario, as previously defined by the model, 95% of the contamination will be removed with this extraction well system within a year. The role of ground-water models is not to provide precise answers to questions posed, but rather to produce results which will guide the decision making process. This value of 95% is not meant to be a precise answer. It was reported only for use in comparing the results of the different extraction well system simulations. Therefore, do not assume that after this extraction well system is in operation, exactly 95% of the contamination may be removed in less than one year. Because of the many unknowns and uncertainties with respect to the ground-water system, it may be more than a year before 95% of the contamination is removed. Continued monitoring of ground-water quality in the area will be necessary in order to evaluate the impact of the extraction well system.

In our analysis, the influence of surface capping of the landfill on water levels was not considered because this influence will be negligible. Without extraction wells, ground-water flow at Hipps Road is influenced primarily by the regional hydrologic conditions. Capping the landfill, affecting a relatively small area, will have a very small impact on water levels. With extraction wells, ground-water flow at Hipps Road will be dominated by well pumpage and capping the landfill will have essentially no effect on water levels at the site.

EFFECTIVENESS OF GROUND-WATER EXTRACTION PROCEDURES

With regard to a containment system, the extraction well system itself creates a hydraulic barrier in the aquifer. This barrier prevents the contaminants from leaving the area, while pumpage draws the contaminants into the wells. Therefore, a physical containment system is not necessary.

With regard to removing soil contaminants, the extraction well analysis addressed only ground-water contamination. The percent removal calculations are based only on contamination of ground water. Soil contamination is addressed elsewhere in the FS report.

With regard to the removal of only water-soluble contaminants, a two-phase ground-water flow model was not used because two-phase (fluid) flow is not evident at the site. Only contaminants dissolved in ground water were discovered in the monitor wells during the remedial investigation and they were in very small quantities. The quantities of contaminant substances found are not great enough to cause two-phase flow as might occur in gasoline spills, for example. Therefore, the analysis only addressed extraction of ground water.

In conclusion, additional testing and further evaluation to address the above factors are not needed. For the reasons explained above, further analysis will not lead to a better answer or solution.

APPENDIX 1

SOURCE OF COMMENTS

Source #	Source
1	Petition form letter received from more than 140 individuals in response to the initial remedial actions considerations stated by EPA at the May 7, 1986 Public Meeting
2	Jacksonville Concerned Citizens Against Contaminated Water, signed by Alvin Speicher, President
3	Yvonne & Donald Woodman, Hipps Road area residents
4	Ike Nolan, Hipps Road area resident
5	Gloria Stratton, Hipps Road area resident
6	Paul & Jean Ott, Hipps Road area residents
7	Henry Vorpe, Hipps Road area resident
8	Department of the Navy, submitted by D. R. Spell, Environmental Branch Head
9	Waste Control of Florida, prepared by Golder Associates, consultants; submitted by Charles H. Tisdale, Jr.
10	Citizens' Clearinghouse for Hazardous Wastes, Inc., prepared by Steven U. Lester, Science Director; submitted by Yvonne Woodman, Hipps Road area resident

APPENDIX 2

NAMES AND ADDRESSES OF COMMENTERS

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Henry Vorpe	9110 Hipps Road Jacksonville, FL 32222	5/22
Mary Beth Woodman*	9084 Hipps Road Jacksonville, FL 32222	5/22
Steven Woodman*	9084 Hipps Road Jacksonville, FL 32222	5/22
Ronald Gagne*	4545 Cambridge Road Jacksonville, FL 32210	5/23
Paul & Jean Ott	7180 Exline Road Jacksonville, FL 32222	5/23
Kenneth Stevens*	6769 Lauriana Place Jacksonville, FL 32216	5/23
Donald Woodson*	P.O. Box 7842 Jacksonville, FL 32238	5/23
Marjorie Gagne*	4545 Cambridge Road Jacksonville, FL 32210	5/23
William Brewer, Jr.*	7005 Greenholly Drive Jacksonville, FL 32211	5/23
Dee Cain*	2744 Ocean Drive, Apt. B Fernandia Beach, FL 32034	5/23
Yvonne Woodman*	P.O. Box 7842 Jacksonville, FL 32238	5/23
Sheryl K. Baker*	498 Eldridge Gelly Street Orange Park, FL 32073	5/27

* = Submitted Form Letter

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Lester D. Senter*	159 Machelle Drive Jacksonville, FL 32220	5/27
Joyce Warrick*	5430 Norde Drive Jacksonville, FL 32244	5/27
Arnold E. Morris*	5150 Pennant Court Jacksonville, FL 32244	5/27
Mrs. Leroy Alline Starling*	5108 Colonial Aveneue Jacksonville, FL 32210	5/27
Ron Stevens*	300 Glenlyon Drive Orange Park, FL 32073	5/27
S.W. Hyman*	858 Crest Drive East Jacksonville, FL 32221	5/27
Mrs. G. Poppalordo*	5952 Blackthorn Road Jacksonville, FL 32244	5/27
Earl M. Henry, Jr.*	8933 Hipps Road Jacksonville, FL 32222	5/27
Thomas Busler*	5400 Collins Road Lot 112 Jacksonville, FL 32244	5/27
Ray Snellgrove*	413 Ameca Avenue Orange Park, FL 32073	5/27
Jimmy Tenney*	8929 Hipps Road Jacksonville, FL 32222	5/27
Terrance Johnson*	8925 Hipps Road Jacksonville, FL 3222	5/27

* = Submitted Form Letter

NAME	ADDRESS	DATE LETTER WAS RECEIVED
James E. Johnson*	8925 Hipps Road Jacksonville, FL 32222	5/27
Edward Hall*	5017 Palmer Street Jacksonville, FL 32210	5/27
Betty Burnett*	8931 Hipps Road Jacksonville, FL 32222	5/27
M. Benton*	5909 111th Street Jacksonville, FL 32244	5/27
Connie & Tracy Patillo*	7040 Exline Road Jacksonville, FL 32222	5/27
Wallace A. Witherbee*	6865 Miss Muffet Lane S. Jacksonville, FL 32210	5/27
William Gann*	3957 Baimer Drive Jacksonville, FL 32210	5/27
Peggy Cox*	7030 Knotts Drive Jacksonville, FL 32210	5/27
William M. Szimore*	8941 Hipps Road Jacksonville, FL 32224	5/27
David W. Strunk	5858 111th Street Jacksonville, FL 32244	5/27
John R. Young*	7514 Strato Road Jacksonville, FL 32210	5/27
Doyle Hall*	8164 Crosswind Road Jacksonville, FL 32244	5/27

* = Submitted Form Letter

NAME	ADDRESS	DATE LETTER WAS RECEIVED
C.E. Franks*	505 Murray Drive Jacksonville, FL 32205	5/27
C.D. Hensley*	4506 Harlow Boulevard Jacksonville, FL 32210	5/27
W.G. Dickinson*	6625 Aline Road Jacksonville, FL 32244	5/27
John O. Mesmer*	8935 Hipps Road Jacksonville, FL 32222	5/27
Susan Marynowski*	2921 NE 13th Street Gainesville, FL 32609	5/27
Clyde A. Brown*	5936 110th Street Jacksonville, FL 32244	5/27
Leroy Starling*	5108 Colonical Avenue Jacksonville, FL 32210	5/27
Everett L. Stratton*	7183 Exline Road #B Jacksonville, FL 32222	5/27
James W. Cox*	7030 Knotts Drive Jacksonville, FL 32210	5/27
Gloria P. Stratton*	7183 Exline Road #B Jacksonville, FL 32222	5/27
Tony W. Poppalardo*	5952 Blackthorn Road Jacksonville, Fl 32244	5/27
Roland Cuevos*	1505 LaVilla Drive N. Jacksonville, FL 32221	5/27

* = Submitted Form Letter

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Danny Newton*	5873 Oaklane Drive Jacksonville, FL 32244	5/27
David L. Phelps*	8103 Poe Court Jacksonville, FL 32244	5/27
Dorothy Johnson*	8925 Hipps Road Jacksonville, FL 32222	5/27
John Hen ____*+	Route 4 Box 6 Hawthorn, FL 32640	5/27
Delmer L. Mattison*	4841 Homecrest Circle Jacksonville, FL 32244	5/27
Peggy Beaviss*	7171 Bunion Drive Jacksonville, FL 32222	5/27
R. Hisoire*	Box 1137 Jacksonville, FL 32239	5/27
Kathy Henderson*	4224 NW 30 Terrace Gainesville, FL 32605	5/27
Donald C. Steele*	491 Clermont Avenue S. Orange Park, FL 32073	5/27
Alta Adams*	6062 Elm Grove Avenue Jacksonville, FL 32244	5/27
Jimmy E. Johnson*	1031 Lamarcke Drive Jacksonville, FL 32205	5/27
Mrs. Lyle Martin*	6224 Sauterne Drive Jacksonville, FL 32244	5/27

* = Submitted Form Letter
+ = Incomplete Address on Comment

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Mr. & Mrs. Larry Batton*	5322 Appleton Street Jacksonville, FL 32210	5/27
Gary J. Court*	7656 Arble Drive Jacksonville, FL 32211	5/27
Gloria Stratton	7183 Exline Road #B Jacksonville, FL 32222	5/27
Ike Nolan	7145 Exline Road Jacksonville, FL 32222	5/27
Scott M. Motel*	3434 Blanding Boulevard Apartment #190 Jacksonville, FL 32210	5/28
Submitted by Chet Tisdale on behalf of Waste Mgmt. Inc.	King & Spalding 2500 Trust Company Tower Atlanta, GA 30303	5/29 pm 5/28
D.R. Spell, PE	Department of the Navy Southern Division Naval Facilities Engineering Command 2155 Eagle Dr., PO Box 10068 Charleston, SC 29411-0068	5/30 pm 5/28
Jacksonville Citizens Against Contaminate Water	PO Box 7842 Jacksonville, FL 32238	5/30 pm 5/28
Yvone Woodman & Donald Woodman	PO Box 7842 Jacksonville, FL 32238	5/30 pm 5/28
Submitted by Yvonne Woodman & Donald Woodman - from Steven V. Lester	Citizens Clearinghouse for Hazardous Waste PO Box 926 Arlington, VA 22216	5/30 pm 5/28
Annette M. Maxey*	1601 Dunn Avenue #7A Jacksonville, FL 32218	5/30 pm 5/28

* = Submitted Form Letter
pm = Postmarked

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Linda Coffman*	6232 Sauterne Drive Jacksonville, FL 32210	5/30 pm 5/28
Kristin A. Case*	4246 Hall Boree Road Middleburg, FL 32068	5/30 pm 5/28
Chris Cummins*	4336 San Juan Avenue Jacksonville, FL 32210	5/20 pm 5/28
Mrs. Charles F. Anderson*	7408 Burlingame Drive S. Jacksonville, FL 32211	5/30 pm 5/28
Gerry E. Suits*	4500 Ramona Street Jacksonville, FL 32205	5/30 pm 5/28
Margaret E.W. Sullivan*	220 Myra Street Neptune Beach, FL 32233	5/30 pm 5/28
Richard E. Coffman*	7236 Blanding Boulevard #116 Jacksonville, FL 32244	5/30 pm 5/28
Doris W. Gates*	5885 Edenfiled Road #726 Jacksonville, FL 32211	5/30 pm 5/28
Mrs. Lori Buck*	4216 Old Mill Cove Terrace W Jacksonville, FL 32211	5/30 pm 5/28
Karen Ward*	102 NE 22nd Street Delray Beach, FL 33444	5/30 pm 5/28
Jeanette A. Todd*	8903 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Betty J. Dickinson*	6625 Aline Road Jacksonville, FL 32244	5/30 pm 5/28
Mary P. Nettles*	3915 Riverside Avenue Jacksonville, FL 32205	5/30 pm 5/28

* = Submitted Form Letter
pm = Postmarked

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Linda C. Jenkins*	8280 Honeysuckle Lane Jacksonville, FL 32244	5/30 pm 5/28
Claude Oglesley*	9280 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Mr. & Mrs. Carroll Pittman*	9066 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Ken Taylor*	6062 Seaboard Avenue Jacksonville, FL 32210	5/30 pm 5/28
Michael H. Daniel*	1419 B. Dancy Street Jacksonville, FL 32205	5/30 pm 5/28
John C. Levigs*	11651 Fort Caroline Road Jacksonville, FL 32226	5/30 pm 5/28
Anthony S. Fiore* (plus a cover letter)	4421 San Clerc Road Jacksonville, FL 32217	5/30 pm 5/28
Alena Ellie*	1300 East Cornwallis Road Durham, NC 27713	5/30 pm 5/28
Bonnie D. Perea*	1011 E. 33rd Avenue Tampa, FL 33603	5/30 pm 5/28
Burna Perea*	1011 E. 33rd Avenue Tampa, FL 33603	5/30 pm 5/28
Janie Fiore*	4421 San Clerc Road Jacksonville, FL 32217	5/30 pm 5/28
Dona Golns*	917 Jones Circle Durham, NC 27703	5/30 pm 5/28

* = Submitted Form Letter
pm = Postmarked

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Janie L. Hansely*	8773 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Neal D. Thomsen*	132 McDowell Avenue ________, GA 31520 +	5/30 pm 5/28
Jewell Thomsen*	132 McDowell Avenue ________, GA 31520 +	5/30 pm 5/28
Janie P. Hansley*	8912 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Edward Jaques*	1108 Blazing Ridge Lawrenceville, GA 30245	5/30 pm 5/28
Holly B. Jaques*	1108 Blazing Ridge Lawrenceville, GA 30245	5/30 pm 5/28
Margaret Oglesley*	9208 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Al Speicher*	9040 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Gail P. Speicher*	9040 Hipps Road Jacksonville, FL 32222	5/30 pm 5/28
Carol Sutkowreik*	1649 Landing Lane Neptune Beach, FL 32233	5/30 pm 5/28
Mr. & Mrs. W.R. Henderson*	1816 Kings Way Neptune Beach, FL 32233	5/30 pm 5/28
William R. Henderson*	1816 Kings Way Neptune Beach, FL 32233	5/30 pm 5/28

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NAME	ADDRESS	DATE LETTER WAS RECEIVED
Scott Pinette*	224 Oak Street Neptune Beach, FL 32233	5/30 pm 5/28
Judith D. Mozo*	120 North Street Neptune Beach, FL 32233	5/30 pm 5/28
Thomas K. Burke*	2016 Strand Neptune Beach, FL 32233	5/30 pm 5/28
Cecilia Vosper*	110 Walnut Street Neptune Beach, FL 32233	5/30 pm 5/28
B. Calhon*	6265 Merrill Road Jacksonville, FL 32233	5/30 pm 5/28
W.H. Boky, Jr.*	1461 Hopkins Creek Lane Neptune Beach, FL 32233	5/30 pm 5/28
Marie Lynch*	1462 Hopkins Creek Lane Neptune Beach, FL 32233	5/30 pm 5/28
Melissa G. Koralakes*	1618 Landing Lane Neptune Beach, FL 32233	5/30 pm 5/28
Laurina Vorndra*	1648 Landing Lane Neptune Beach, FL 32233	5/30 pm 5/28
Kim Harey*	1454 Hopkins Creek Lane Neptune Beach, FL 32233	5/30 pm 5/28
Dianne Markin*	1519 Hopkins Creek Lane Neptune Beach, FL 32233	5/30 pm 5/28
Oscar L. Hendrisk*	1627 Hopkins Creek Lane Neptune Beach, FL 32233	5/30 pm 5/28

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NAME	ADDRESS	DATE LETTER WAS RECEIVED
J. Carlson*	1409 Indian Woods Drive Neptune Beach, FL 32233	5/30 pm 5/28
E. Pife*	1304 Forest Marsh Drive Neptune Beach, FL 32233	5/30 pm 5/28
Martha James*	1440 Bucknoll Cove Neptune Beach, FL 32233	5/30 pm 5/28
Janet W. Montgomery*	1424 Bucknoll Cove Neptune Beach, FL 32233	5/30 pm 5/28
Gregory J. Streeter*	427 6th Street N. Jacksonville, FL 32240	5/20 pm 5/28
Bernie L. Brewer*	1435 Bucknoll Cove Neptune Beach, FL 32233	5/30 pm 5/28
Particia B. Oarnswarth*	1419 Forest Marsh Drive Neptune Beach, FL 32233	5/30 pm 5/28
Douglas J. Jaegar*	1731 Indian Woods Road Neptune Beach, FL 32233	5/30 pm 5/28
Gary Gene Kirkland*	1811 Indian Woods Road Neptune Beach, FL 32233	5/30 pm 5/28
Paul R. Coombs*	224 Oak Street Neptune Beach, FL 32233	5/30 pm 5/28
Larry Phillips*	1512 Big Tree Road Neptune Beach, FL 32233	5/30 pm 5/28
Maria A. Dill*	1501 Big Tree Road Neptune Beach, FL 32233	5/30 pm 5/28

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pm = Postmarked

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Renee Albert*	919 Neptune Circle Neptune Beach, FL 32233	5/30 pm 5/28
Tom Rady*	1314 Big Tree Road Neptune Beach, FL 32233	5/30 pm 5/28
Lucille Young*	1401 Kings Road Neptune Beach, FL 32233	5/30 pm 5/28
Linda White*	1406 Big Tree Road Neptune Beach, FL 32233	5/30 pm 5/28
Ken Kirton*	1504 Big Tree Road Neptune Beach, FL 32233	5/30 pm 5/28
P. Bailey*	1603 Arrowhead Neptune Beach, FL 32233	5/30 pm 5/28
Alfred W. Shepherd*	1510 Windward Lane Neptune Beach, FL 32233	5/30 pm 5/28
C.W. Johnston*	1643 Leeward Lane Neptune Beach, FL 32233	5/30 pm 5/28
Colton L. Pusler*	1528 Leeward Lane Neptune Beach, FL 32233	5/30 pm 5/28

* = Submitted Form Letter
pm = Postmarked

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Brenda & Art Zipperer*	8389 Hilma Road Jacksonville, FL 32244	6/2 pm 5/30
Clifton A. Todd*	8903 Hipps Road Jacksonville, FL 32222	6/2 pm 5/29
Rose A. Contreras*	7627 Indian Lakes Drive #2 Jacksonville, FL 32210	6/2 pm 5/29
John R. Smith*	6054 Toyota Drive Jacksonville, FL 32244	6/2 pm 5/29
Frank Smith*	6301 Roosevelt +	6/2 pm 5/29
Allen Himes*	8314 Dandy Avenue Jacksonville, FL 32211	6/2 pm 5/29
Dina Pork* +		6/2 pm 5/29
Earnest L. Walker*	371 Spruce Street +	6/2 pm 5/29
Gerald G. Hill*	8936 Hipps Road Jacksonville, FL 32222	6/2 pm 5/29
Daniel J. Hurst*	1290 Lakeshore Boulevard Jacksonville, FL 32220	6/2 pm 5/29
L.D. Stokes*	11646 Nickel Lane Jacksonville, FL 32220	6/2 pm 5/29
M.E. Kelly*	7135 Shindler Drive Jacksonville, FL 32244	6/2 pm 5/29

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pm = Postmarked
+ = Incomplete Address on Comment

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Allen M. Miller*	2103 Figaso Lane Jacksonville, FL	6/2 pm 5/29
Henry B. Bowden, Jr.*	7704 Hare Avenue +	6/2 pm 5/29
Jerome Rivers*	4662 Roanoke Boulevard	6/2 pm 5/29
W.L. Budgets*	3019 Roselle Street Jacksonville, FL 32205	6/2 pm 5/29
William Durham*	6606 Kincock Drive +	6/2 pm 5/29
Angela D. & Richard T. Evernder*	8350 Sunflower Court #9 +	6/2 pm 5/29
Robert Gidcumb*	4352 Vicksburg Avenue Jacksonville, FL 32210	6/2 pm 5/29
Ernest O. Thomas*	2534 Lantites Jacksonville, FL	6/2 pm 5/29
Fredrick W. Hughes*	P.O. Box 7006 Jacksonville, FL 32238	6/2 pm 5/29
Donna Carter*	6477 Cooper Lane Jacksonville, FL 32210	6/2 pm 5/29
K.R. Beals*	6455 San Juan Avenue #9 Jacksonville, FL	6/2 pm 5/29
Robert E. Allen*	4754 Burgundy Road Jacksonville, FL 32210	6/2 pm 5/29
Allen G. Appler	1155 Hamlet Lane E. Neptune Beach, FL 32233	6/2

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pm = Postmarked
+ = Incomplete Address on Comment

NAME	ADDRESS	DATE LETTER WAS RECEIVED
Jacquiline M. Pooler*	1528 Leeward Lane Neptune Beach, FL 32211	6/2 pm 5/30
Laurie Sorg*	1149 Hamlet Lane Neptune Beach, FL 32211	6/2 pm 5/30
Allen G. Applar*	1155 Hamlet Lane E. Neptune Beach, FL 32211	6/2 pm 5/30
Clare A. McCruz*	1708 Hamlet Lane N. Neptune Beach, FL 32211	6/2 pm 5/30
Nenelzo G. Shealy*	1828 Hamlet Lane N. Neptune Beach, FL 32211	6/2 pm 5/30
William Daly*	1836 Hamlet Lane Neptune Beach, FL 32211	6/2 pm 5/30
P.A. Robar*	1110 Hamlet Court Neptune Beach, FL 32211	6/2 pm 5/30
Susan L. Zeltway*	1121 Hamlet Court Neptune Beach, FL 32233	6/2 pm 5/30
Glynn Wilson*	1128 Hamlet Court Neptune Beach, FL 32233	6/2 pm 5/30
Mary Edwards*	1140 Hamlet Court Neptune Beach, FL 32233	6/2 pm 5/30
Bob Marshburn*	1145 Hamlet Court Neptune Beach, FL 32233	6/2 pm 5/30
Charles H. Thompson*	1150 Hamlet Lane E. Neptune Beach, FL 32233	6/2 pm 5/30
Owen Jolly*	5114 Benning Road Jacksonville, FL 32205	6/3 pm 5/31
Gloria Jean Jolly*	5114 Benning Road Jacksonville, FL 32205	6/3 pm 5/31

* = Submitted Form Letter
pm = Postmarked

APPENDIX C

City of Jacksonville
Division of Public Works
Position Letter
Regarding the Availability
of the
Local Publicly Owned Treatment Works
for
Disposal of Recovered Ground Water
from the
Hipps Road Landfill Site

DEPARTMENT OF PUBLIC WORKS
Water Services Division

July 31, 1986

ERRB/RAS
RECEIVED
AUG 04 1986
EPA - REGION IV
ATLANTA, GA.

Ms. Kristina L. Teepen
Remedial Project Manager
Emergency & Remedial Response Branch
U. S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30365

Re: Hipps Road Landfill NPL Site - Availability
of the Southwest Waste Water Treatment Plant
for Disposal of Recovered Ground Water

Dear Ms. Teepen:

The Water Services Division of the Department of Public Works has reviewed your letter of July 29, 1986 and we are agreeable to working with EPA, DER, or its contractors in the treatment and disposal of water from the Hipps Road site. However, we are aware that the acceptance of this water may have major impacts on our operating permits and a thorough review of all the permitting and liability consequences must be made before approval to connect is given. We are also concerned that the public may perceive our POTW as a hazardous waste facility -- this perception cannot be allowed and we would expect a strong commitment from EPA to educate the public about the entire operation at Hipps Road.

There is no doubt that the caution you will detect on the part of the City will be disproportionate to any possible environmental risk in treating this effluent. However, we pride ourselves in our compliance and will under no circumstance tolerate any action that risks compliance with our pretreatment standards or operation permits. We are agreeable to working with EPA because we see our POTW as the only viable solution likely to be acceptable to the public.

Again, let me restate our willingness to work with EPA but only following thorough review of the constituents and the effect on our permit.

Very truly yours,

Allan E. Williams, P.E.
Deputy Director (Water and Sewer)

AEW/jh

cc: Scott D. Kelly
Patrick T. Karney
Ron Leins - FDER

AREA CODE 904 / 633-3052 / 220 E. BAY STREET / JACKSONVILLE, FLORIDA 32202—3493
EQUAL OPPORTUNITY EMPLOYER

APPENDIX D

Department of the Interior
Fish and Wildlife Service
Natural Resource Damage Assessment
Release from Claims

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUN 2 5 1986

ER84/1519

Mr. Gene Lucero, Director
Environmental Protection Agency
Office of Waste Programs Enforcement
401 M Street, SW (Room S362N) WH [illegible]
Washington, D.C. 20460

Dear Mr. Lucero:

The Department of the Interior has reevaluated the Hipps Road Landfill site, Jacksonville Heights, Duval County, FL, because of new information made available by EPA, Regional IV. This letter constitutes a revised Preliminary Natural Resources Survey, and updates the survey sent to you on October 10, 1985.

The area surrounding Hipps Road Landfill provides habitat suitable for migratory birds, and the Ortega River/St. Johns River system contains several anadromous fish species. In addition, several endangered species occur in Duval County. However, there is no evidence that these trust resources or lands under DOI stewardship have been impacted by materials from this site.

Accordingly, we are prepared to grand a release from claims for damages to natural resources under our trusteeship from the Hipps Road Landfill.

Sincerely,

Bruce Blanchard, Director
Office of Environmental Project Review

cc:
Steve Klein/EPA

ERRB/RAS
RECEIVED
JUL 09 1986
EPA - REGION IV
ATLANTA, GA.

APPENDIX E

State of Florida
Department of Environmental Regulation
Letter of Concurrance
for the
Selected Remedy

ERRO

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

August 15, 1986

Mr. Jack Ravan
Regional Administrator
United States Environmental
Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Jack:

The Florida Department of Environmental Regulation agrees with and commits to the recommended remedial alternative, designated RA-8, proposed in the final draft feasibility study for the Hipps Road Landfill Superfund Site in Duval County, Florida. This alternative includes ground water recovery and treatment at the City of Jacksonville's S.W. Sewage Treatment Plant, proper landfill closure, institutional controls, and long-term monitoring. The remedial action will effectively remove the existing ground water contaminant plume and eliminate all pathways for human exposure.

The state will also accept its responsibility to provide 10 percent of the $3.1 million cost for the project through the state Water Quality Assurance Trust Fund. We are fully committed to the continued operation and maintenance of the remedial activities beginning one year after ground water cleanup goals are achieved.

We appreciate your reconsideration of the ground water cleanup element of the remedial action and we will be glad to work with you to determine site specific cleanup goals during the design phase. We look forward to continued cooperation with the U.S. Environmental Protection Agency in the successful implementation of this project.

Sincerely,

Suzanne P. Walker
for Victoria J. Tschinkel
Secretary

VJT/ps

Protecting Florida and Your Quality of Life

APPENDIX F

EPA Position Statement
Regarding
Relocation Policies
for
Affected Property Owners

MEMORANDUM

DATE: AUG 0 1 1986

SUBJECT: Hipps Road Landfill; Relocation of Homeowners

TO: Kris Teepen
Remedial Project Officer

FROM: Robert W. Caplan
Office of Regional Counsel

EPA has determined that proper implementation of the remedy selected by EPA for the Hipps Rd. site will require that approximately five (5) houses be removed and/or razed and the families relocated. Several questions have been raised in the Region concerning the appropriate mechanisms and procedures for funding and implementing relocation efforts including:

1. Whether relocation of residents is a recognized and permissable remedy under CERCLA.

Answer: Yes. Under Section 101(24) of CERCLA, the word "remedy" is defined to include "the costs of permanent relocation of residents..."

2. When is permanent relocation an appropriate remedy?

Answer: Under Section 101(24) of CERCLA, permanent relocation is appropriate "...where the President determines that, alone or in combination with other measures, such relocation is more cost-effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare.

3. Is permanent relocation of residents appropriate for the Hipps Rd. site?

Answer: Based on its determination that excavation and removal of landfilled materials from the Hipps Rd. site would be too costly and dangerous, EPA selected a cost-efficient and technologically feasible remedy which calls for properly closing the landfill with an adequate cap, and groundwater remediation. The selected remedy meets the requirements of the NCP that such remedy be a "cost-effective remedial alternative that effectively mitigates and minimizes threats to and provides adequate protection of public health and welfare and the environment". According to preliminary conceptual designs of the remedy, several houses need to be removed or razed to ensure adequate room for construction of the cap. In short, EPA believes that relocation is more cost-effective than and enviornmentally preferable to excavation and off-site disposition of landfilled wastes.

4. If permanent relocation is selected and approved as part of the remedy, which federal and/or state agencies are responsible for handling the administrative of such effort?

Answer: The Federal Emergency Management Administration (FEMA) has authority under Executive Order to administer relocation efforts for CERCLA matters. FEMA's primary responsibility in this regard is to negotiate prices with property owners. Once price is agreed upon, the funds are provided by Superfund. The State of Florida would be required to take title to the property. The process employed in the Hipps Rd. site would be similar to the Times Beach relocation effort.

5. What compensation, if any, is due to home/property owners whose homes and/or property are not on the landfill but will be impacted by construction of the remedy and/or temporary and permanent monitoring activities?

Answer: This is a troublesome topic for EPA's remedial activities. As a general rule, EPA does not purchase such property through condemnation or other procedures, or with Superfund monies. EPA has advanced the argument that it has statutory authority to enter such property for purposes of constructing the remedy or staging for construction. However, in a recent federal court opinion, the Court ruled that EPA had no such authority to enter off-site property to construct or stage construction of the remedy. With respect to the Hipps Rd. site, two such off-site parcels of property to which EPA may need access are owned by Al Speicher (located at 9040 Hipps Rd.) and Mr. Strange (Exline Rd.). Based on their previous comments, it is likely they will prefer to be relocated. Presently, EPA has no legal authority to fund relocation of Mr. Speicher or Mr. Strange. Further, EPA's policy is that neither Mr. Speicher nor Mr. Strange will be reimbursed by the Agency if part of their property is needed on a temporary or permanent basis. In the event

EPA does seek access to their respective properties, Mr. Speicher and/or Mr. Strange may initiate a lawsuit which may impede the implementation of the remedy.

6. Must permanent relocation be approved by EPA Headquarters?

Answer: Headquarters has indicated that it must, unless the Hipps Rd. site ROD is a delegated ROD. I will update this as soon as I receive more information.

APPENDIX G

Department of Health and Human Services
Agency for Toxic Substance and Disease Registry
Public Health Evaluation
for
Hipps Road Landfill Site

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date · MAY 1 6 1986

From Acting Director
Office of Health Assessment

Subject Health Assessment: Hipps Road Landfill SI-86-046
Jacksonville, Florida

To Mr. Chuck Pietrosewicz
Public Health Advisor
EPA Region IV

EXECUTIVE SUMMARY

The Hipps Road Landfill Remedial is a former landfill that ceased operation in 1970 and was subsequently covered with local soil of inadequate quality for a proper cap. A January 1985 emergency response action (providing an alternate, permanent water supply) appears to have addressed the only opportunity for the site to present a potential public health threat. The site should be properly closed and proper groundwater monitoring instituted.

STATEMENT OF PROBLEM

The Environmental Protection Agency (EPA) requested the Agency for Toxic Substances and Disease Registry (ATSDR) to review and comment on the health and risk assessment, the Feasibility Study (FS), and the adequacy of the proposed remedial alternatives for the protection of public health.

The Hipps Road Landfill is located at the southeastern corner of the intersection of Hipps and Exline Roads west of downtown Jacksonville, Florida. The landfill occupies approximately 7 acres in what was once a cyprus swamp. It is presently a relatively flat area sparsely covered with grass, brush, and pine trees. Fill material is reported to be buried on the site to a depth of 25 feet.

The facility, operated by Waste Control of Florida, Inc., ceased operations in 1970, at which time the fill was covered with a layer of soil and sold as residential lots. There are two homes located between the landfill and Hipps Road, and one residence located on the west side of the site on Exline Road.

The area surrounding the Hipps Road Site is residential and, until recently, these residences depended exclusively on private wells for water supply. After several wells, reportedly tested in April 1983, were found to be contaminated with volatile organic compounds, those residences were given bottled water and city funds were appropriated to extend the city water system to include this area. City funds were not provided to the individuals to connect to the extended lines, thus, only those who wished and had the funds could connect to the city system. During January 1985, EPA, through an emergency response action based upon ATSDR advice, connected the remaining residences to the city supply.

DOCUMENTS REVIEWED

1. Request for Assistance, Chuck Pietrosewicz, ATSDR, to Chief, Field Services, ATSDR, March 14, 1986.
2. "Remedial Investigation Report for Hipps Road Landfill Site, Jacksonville, Florida," February 10, 1986.
3. "Hipps Road Landfill, Feasibility Study, Draft Report," February 24, 1986.
4. "Site Analysis, Hipps Road Landfill, Duval County, Florida," by Bionetics Corporation, Warrenton, Virginia, June 1985.
5. ATSDR site files.

CONTAMINANTS AND PATHWAYS

Table 1 presents the maximum concentrations for numerious chemical species reportedly found in various sampling locations on and around the

Hipps Road Landfill. Based upon the data provided for chemical concentration in surface soil and groundwater, and the fact that the groundwater is no longer being consumed in the area of the site, there does not appear to be a pathway for significant human exposure related to this site.

DISCUSSION

The already-completed emergency response action of connecting the residences to the public water supply has addressed the only documented pathway for potential significant human exposure for this site. Any remedial action which would excavate the waste or treat the groundwater would provide a new potential pathway for exposure.

The method by which the data was presented in the review documents makes it difficult to fully evaluate the site. There does not appear to be any clear presentation of the data from the private wells on which the initial remedial action was based. In addition, there appears to be some inconsistencies in the Remedial Investigation (RI). For example, in Table 3-4, the concentration of zinc in borehole BH-15 is reported as 1,400 ug/l, while in Table 9-1, it is reported as 33,000 ug/l.

In order to interpret the groundwater condition in the vicinity of the site, it would have been useful to have sampled the same wells on more than one occasion. This would demonstrate that the contamination was actually present in the water and show if the concentration of the contamination was changing with time.

From the data provided, there appears to be one private well, one off-site monitoring well, and several on-site boreholes with substantial organic contamination, and one on-site borehole with high metal concentrations. The private well contamination is with methylene chloride which is ubiquitous in laboratories and notorious as a contaminant in the analytical process. The reported 5,700 ug/l appears to be somewhat higher than might be expected from laboratory contamination. However, it is also more than two orders of magnitude greater than any of the other water samples from the site. Therefore, it would be difficult to consider the site to be the source of this compound if it is, in fact, present in the groundwater of the private well. The reported methylene chloride in this well is also called into question because the monitoring wells in the immediate vicinity report none of this compound. The other private well data reported show low concentrations of toluene below any level for public health concern for consumption of the water.

There appears to be little relationship between the materials reportedly found in the soil and the groundwater from the bore holes on the site. Specifically, polychlorinated biphenyls (PCBs) were reported in the groundwater from the bore holes at concentrations which appear equal to or greater than the water solubility for the compounds, while at the same time, the soil samples from these bore holes show no PCBs even though they were analyzed by priority pollutant procedures. This situation in which the materials were reported either to be present in the soil and not the groundwater, or vice versa, appears to call into question the analytical results.

Another result that calls into question the validity of the analytical results is that of aluminum. In many of the samples from the bore holes, the temporary wells, and both series of monitoring wells, the aluminum concentration is reported to be in the thousands of ug/l, some even tens and hundreds of thousands of ug/l, while the maximum reported value for the private wells is 280 ppb, with most of the reported values being reported as less than the detection limit of 200 ppb. It seems difficult to explain this wide difference in concentration with at least some of the monitoring wells and private wells in close proximity to each other and withdrawing from the same aquifer. While this is not the only difference in results from adjacent wells, it is the most glaring example.

It appears that, at least in the off-site private wells, there is no substantial indication that the landfill is the source of general contamination. While the downgradient wells PW-6, PW-7, PW-8, PW-9, and the on-site well PW-10 show contamination, there is no consistency in the contaminant; PW-6 has 1,2-dichloroethane, PW-7 has methyl ethyl ketone, PW-8 has methylene chloride, PW-9 has lead, and PW-10 has the maximum reported concentration (24 ug/l) of toluene. In the other private wells toluene was less than 10 ug/l.

One of the few consistencies in the data is the reported concentration of vinyl chloride in the three monitoring wells, EMW-6 (32 ug/l 50'), EMW-2 (28 ug/l 55'), and EMW-3 (31 ug/l 60'), which appear to be in the general direction of the predicted groundwater flow, i.e., in a northeasterly direction as well as into the aquifer. This uniformity of concentration would, along with the general lack of precursor chemicals, indicate that the vinyl chloride had been produced by biodegradation essentially on the site and that further rapid increase in concentration is not occurring. In order for this situation to occur, i.e., essentially complete degradation of the precursor chemicals, it would require very slow migration from the source of the contamination to the nearest monitoring well. Since it has been nearly 15 years since the landfill ceased operation, there has been ample time to develop an environment for biodegradation. Thus, the occurrence of substantial biodegradation would not be surprising. In fact, the concentration of the one possible precursor, trans-1,1-dichloroethene, also a biodegradation product, is not constant in these three wells, but is higher in the more distant wells, EMW-2 (27 ug/l 55') and EMW-3 (24 ug/l 60'), than in the nearby well EMW-6 (6 ug/l 50"). Since there are no reported precursor compounds for the dichloroethene in the groundwater samples from these wells, this inverse gradient from the landfill could indicate that the concentration of precursor chemicals in the landfill has diminished significantly since the water at the more distant wells left the point of contamination. If the vinyl chloride can, in fact, be used as a conservative indicator of pollutant migration from the site, then the substantial variation in concentration of other chemical species among these three wells cannot be explained by the assumption that they all came from the same source. However, with only one set of data to evaluate, any conclusions about what may be occurring in the groundwater is pure conjecture.

COMMENTS

The feasibility study on page 2-12, states that site-specific data for soil samples show that contaminants such as toluene and methylene chloride are found in levels capable of producing a leachate with concentrations exceeding the cleanup goals. The data cited were not provided for review; however, the data available for review (remedial investigation) did not appear to support this claim.

The use of data for a compound like n-nitrosodiphenylamine as an indicator compound for this site does not appear to be valid. It was reportedly found in two on-site wells; however, because of analytical limitations it could not be distinguished from diphenylamine. If this compound is to be used as an indicator of contamination for this site, then it is necessary for its presence to be documented by additional analytical work so that identification is positive. Without this effort, the potential presence of this compound should not be used in the site evaluation.

CONCLUSIONS AND RECOMMENDATIONS

The already-completed emergency response action of providing an alternate, permanent water supply has addressed what appears to be the only opportunity for the site to present a potential public health threat. From the data available, it appears that there is no evidence that the site is currently presenting a public health threat, or that it likely will in the future. Since there is no demonstrated pathway for human exposure to the chemicals associated with the site, most of the proposed remedial action would be counterproductive for protection of public health because, with the exception of capping the site, they all propose some effort to remove and treat the contaminated water and soil. Even though these media appear to be, in general, only slightly contaminated, this activity could contaminate the air or surface soil at levels greater than currently present, thereby exposing the local population unnecessarily.

Since the site reportedly was not properly closed, proper closure and monitoring of the site should be provided.

Jeffrey A. Lybarger, M.D.

Attachment

TABLE 1. SELECTED CHEMICALS REPORTED
IN VARIOUS SAMPLES
FROM HIPPS ROAD LANDFILL

CHEMICAL	BORE HOLE WATER ug/l	BORE HOLE SOIL mg/kg	OFF-SITE GROUND WATER ug/l	ON-SITE SURFACE SOIL mg/kg	OFF-SITE SURFACE WATER mg/kg
arsenic	220		18		
barium			110		
beryllium	19				
cadmium	60	1.2			
cobalt	42				
chromium	1100	1.2	35		
copper	1200		51		
lead	5300	18	29		
mercury	18	0.10			
nickel	370	14	29		
selenium	27				
vanadium	1100				
zinc	11000	33	200		
acetone			800		PRESENT
C-3 alkylbenzene			10		
C-4 alkylbenzene			20		
C-5 alkylbenzamide			10		
benzene	408	0.005	8		
carbon disulfide	18	0.001	8.9		
chlorobenzene	297	0.11	4.7		
chrysene					PRESENT
1,2-dichlorobenzene	39.3				
1,4-dichlorobenzene	11	0.14			
1,1-dichloroethane			5.3		
trans-1,2-dichloroethene			33		
endrin ketone					PRESENT
ethylbenzene	162	0.011	68		
ethyl ether			7		
ethylhexanoic acid			20		
benzo(a)anthracene					PRESENT
dibenzo(a,h)anthracene					PRESENT
Benzo(ghi)perylene					PRESENT
benzo(a)pyrene					PRESENT
indeno(1,2,3-cd)pyrene					PRESENT
methylene chloride	4.8				
methyl ethyl ketone		0.003	9.7		
methyl isobutyl ketone			22		
methoxychlor					PRESENT
1,2-diphenylhydrazine /azobenzene				1.0	
methylnonanediol			70		
methylpentanediol			20		
naphthalene	96	0.45	20		
N-nitrosodiphenylamine /diphenylamine	7.6		16		
oxybisethoxyethane			100		
PCB-1242	36				
PCB-1260	38				
PCB-1254	1.8				
phenol	34		13		
methylphenol	5.7				
2-methylphenol			46		
4-methylphenol					PRESENT
2,4-dimethylphenol			13		
bis(2-ethylhexyl)phthalate	96				
di-n-butylphthalate				39	PRESENT
propanol			40		
tetrahydrofuran			11		
toluene	49		68		PRESENT
trichloroethene			2		PRESENT
trimethylbicyloheptanone			70		
vinyl chloride			73		
xylenes (total)	220	0.32	93		